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In THE MUNICIPAL INDEX (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find much material, including lists, and articles on a wide variety of municipal and civic subjects, not published in the monthly issues of the magazine.

See pages 21, 22, 87, 89, for notices of catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 114

With the self-centering shoulder in the bell, deLavaud pipe is easy to install.

Our pipe bears this trademark of The Cast Iron Pipe Research Association.

Lighter in weight yet 25% stronger than pit cast pipe—no wonder the mileage of de Lavaud pipe continues to mount in an accelerating curve. More than 10,000 miles laid in 9 years. Easy to handle, and with the automatically centering shoulder in the bell, easy to install. Made in accordance with the recently revised Federal Specification for Cast Iron Bell and Spigot Water Pipe (WW-P-421), A. W. W. A. and A. G. A. specifications. Write for new data.

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U. S. CAST IRON PIPE

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What Are "Self-Liquidating" Public Works?

A UNIQUE and much-needed opportunity for municipalities, counties and other public bodies to secure Federal aid in the financing of well-planned public works has resulted from the enactment of the Emergency Relief and Construction Act of 1932, the provisions of which are quoted in some detail on pages 80 and 81 of this issue.

A large part of a billion and a half of new loan funds of the Reconstruction Finance Corporation are made available, under the terms of the Act, "to aid in financing projects authorized under Federal, state or municipal law which are self-liquidating in character." The Act further specifies that "a project shall be deemed to be self-liquidating if such project will be made self-supporting and financially solvent and if the construction cost thereof will be returned within a reasonable period by means of tolls, fees, rents, or other charges, or by such other means (other than by taxation) as may be prescribed by the statutes which provide for the project."

A Tentative List

It is assumed that the Reconstruction Finance Corporation will issue at an early date definite instructions for states and their political subdivisions as to procedure to be followed. As a possible aid to the Corporation and to public authorities desirous of securing for their respective communities a share of the available loans, THE AMERICAN CITY has prepared the following list of types of public works which its editors believe to be eligible for Federal aid as "self-liquidating" under the foregoing definition:

Water Works

Electric Light and Power Plants or Electric Distribution Systems

Gas Plants

Transit Systems (subway, elevated, street railway or bus)

Toll Bridges, Tunnels, Viaducts and Canals

Piers, Docks and Markets

Street Paving and Road Building (if amortized from gasoline taxes)

Street Opening, Widening, Paving and Lighting Installations (if paid for by special assessments on benefited property)

Sewers and Sewage Disposal Plants (if paid for by rents or assessments)

Garbage Disposal Plants (if paid for in part by charges to householders for garbage collection and in part by power generated or material salvaged through incineration or reduction)

Public Recreation Facilities for which fees are charged, such as Swimming Pools, Bathhouses, Bathing Beaches, Tennis, Golf, etc.

Reforestation

Shade Tree Planting (if paid for by assessment on abutting property)

Irrigation, Drainage and Reclamation Projects (if paid for by assessment on benefited property)

Public Buildings (where these will replace quarters for which rent is now being paid)

Public Comfort Stations (made self-supporting by fees charged and rent of concessions)

Airport Improvements (if amortization can be covered by contracts for the use of the field, or by concessions, automobile parking charges, etc.)

Housing (under conditions* mentioned in the Act)

It seems possible, also, that such buildings as libraries, school and college buildings, hospitals, health centers, and charitable and correctional institutions would be regarded as self-liquidating if pledges were received from local citizens to amortize the cost of the buildings over a period of years by voluntary gifts.

Prompt Action Important

Municipalities or counties desirous of undertaking projects such as the foregoing, and unable to negotiate loans at reasonable rates of interest through normal channels, would do well to file early application with the Reconstruction Finance Corporation in Washington.

As soon as definite rulings as to procedure are obtainable from the Corporation, the advice of the law department of the local government should be promptly had as to such new ordinances or state legislation, if any, as may be required to authorize the service charges, benefit assessments, or other non-tax revenues which may be required as a condition of Federal aid.

The primary purpose of the new law, as indicated by its title, is to stimulate and aid emergency relief and construction. Activities begun this fall in thousands of localities throughout the United States may be worth much more in breaking the depression and in meeting urgent local needs than much larger expenditures for relief and construction if not begun until next spring. The time for action has come!

* See pages 82 and 83 of this issue.

$650,000,000 Asked - $5,506,000,000 Subscribed

THAT there is no real shortage of funds in the United States to finance, at low rates of interest, public works and housing projects on a scale vast enough to banish unemployment and restore prosperity, is plain from what happened during the last week in July.

On July 25 the Treasury Department announced, with complete absence of the ballyhoo methods used in the war-time Liberty Loan drives, that subscriptions were invited for two issues of Treasury notes totaling $650,000,000 at interest rates of but 2⅛ and 3¼ per cent respectively. Of this amount about one-third was to meet outstanding certificates of indebtedness due August 1, 1932, and two-thirds to meet early requirements of the Reconstruction Finance Corporation under the new Emergency Relief and Construction Act.

Three days later the Secretary of the Treasury was able to announce that subscriptions totaling more than $5,506,000,000 had been received.

The exceedingly favorable condition of the money market, apparent from this huge oversubscription, indicates that ample funds ought to be available through regular banking channels for such types of needed local public works as cannot meet the technical requirements of self-liquidation to which Federal aid has been restricted.

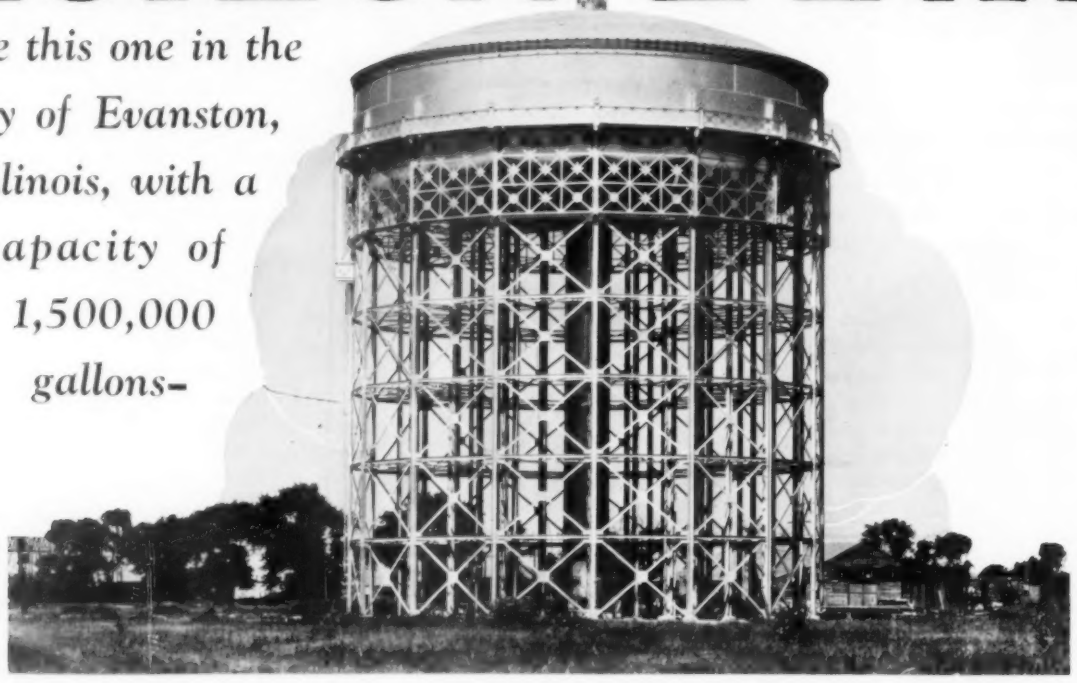
Immediately following the stock-market crash of the fall of 1929, THE AMERICAN CITY said editorially:

> "The American people are facing a crisis which demands clear thinking and prompt action by all who spend, or advise in the spending of, public funds. A time of speculative setback is no time for curtailment of public works. . . .
>
> "American prosperity will recover from its present shock, not by foolish hoarding and loafing, but by wise spending and building."

Municipalities and counties whose officials showed this type of courage and leadership have helped greatly to mitigate a depression which otherwise would have been far worse. Last month's tardy action by Congress may not be too late to speed the upswing now apparently starting, if local governments will ignore false pleas for "economy" and do their share to relieve distress and hasten good times.

HORTON TANKS

Like this one in the city of Evanston, Illinois, with a capacity of 1,500,000 gallons–



Increase low pressures...Reduce high pumping costs...Provide needed storage for emergencies

Adequate elevated storage can improve most municipal water systems. In the installation pictured above all three of the common advantages prompted the recent addition of the million-and-a-half-gallon tank—the first elevated storage in this city of 65,000 on the shore of Lake Michigan. In the words of W. W. Polk, Superintendent and Chief Engineer, Evanston Water Department, "The tank was installed primarily to increase pressures in the southwest section of the city where low pressures occurred during peak demand periods. It will result in a more uniform load curve at the water works and provide valuable storage for emergencies."

In this case as in many others in recent years, the city's choice of a tank was the latest development in Horton shallow-depth designs.

Every advantage of elevated storage is realized to the greatest extent in these modern structures which permit storage of all the water within a comparatively narrow range of static head. The Evanston tank has a diameter of 104 feet and a range of head of only 25 feet. This radial cone-bottom design is so flexible that almost any desired combination of height and diameter is possible. It is particularly advantageous for large capacities.

Whatever size tank may be needed to fit your conditions it can be supplied in a Horton shallow-depth design. Attractive appearance is available in Horton tanks without an exorbitant increase in cost. Our nearest office will gladly show you tank designs and cooperate with your engineers by furnishing cost data for estimating purposes.

CHICAGO BRIDGE & IRON WORKS

Chicago.....2127 Old Colony Bldg.
New York.....3108 Hudson Terminal Bldg.
Cleveland.....2236 Midland Bldg.
Detroit.....1501 Lafayette Bldg.
Philadelphia.....2616 "1616" Walnut Street Bldg.
Boston.....1501 Consolidated Gas Bldg.
Birmingham.....1502 Fiftieth St., N.
Dallas.....1206 Burt Bldg.
San Francisco.....1033 Rialto Bldg.
Seattle.....4343 Smith Tower
Houston.....2919 Main Street
Tulsa.....1425 Philcade Bldg.
Los Angeles.....1303 Pacific Mutual Bldg.
Havana, Cuba.....Apartado 2507

Plants at Chicago, Birmingham, and Greenville, Pa.

AC 8-Gray

Do you mention THE AMERICAN CITY? Please do.

Pure Water—Man's Greatest Need

Legal and Moral Responsibility

PUBLIC health officials are exercising closer and closer supervision, and the stringency of their requirements is increasing almost daily. This insistence that pure water is the direct responsibility of the water-works official is being reflected in the courts by the number of decisions awarded people suing water supplies, both company and municipal, for damages sustained from drinking a polluted water. Court decisions hold that while the corporation supplying the water is not liable under the doctrine of implied warranty as a guarantor of the water's purity, it is liable for negligence in failing to exercise reasonable care in apprehending danger and taking necessary steps to prevent it. Various courts have further held that municipalities are in no way more exempt from this liability than a private company, since they are acting as a private corporation and are to be considered in a corporate rather than a governmental capacity. The various courts that have handed down decisions on this liability concur on the following:

1. A city or water company is liable for any disease contracted from pollution in the water it distributes.

2. It cannot shift this responsibility.

Aside from the legal responsibility, the moral obligation of any one furnishing as important a commodity as drinking water to a number of people is very clear. The ordinary consumer, while he can judge by eye as to the clarity of this water, has no way of ascertaining its bacteriological purity unless he knows of some means by which it is being polluted. He has, of necessity, to trust those in charge of the water system to make ample provisions for his protection and constant check-ups to insure the maintenance of a water fit to drink.

Dr. James A. Tobey concludes an article, "Liability for Water-Borne Typhoid," with these remarks:

"The review of a score or more of court decisions on the liability for typhoid is convincing proof of the principle that, entirely apart from the humanitarian aspects involved, it is poor business for a corporation of any kind to neglect such an important matter as the safeguarding of the water it dispenses. Any corporation in the water business will, as a consequence of the law of liability regarding typhoid, find it a good investment to employ adequate methods to protect the purity of the water, as by proper filtration and chlorination. The first cost and operating expenses of chlorination or other effective sterilization are certain to be less than the damages which are likely to be awarded for sickness due to a carelessly polluted water supply.

"The law has recognized that water is too precious a commodity to be handled carelessly. In this respect the law has kept abreast of scientific progress in public health. This is as it should be, for the protection and promotion of the health of the people demands that those charged with the responsibility of making available a necessary commodity for human consumption must see to it that adequate measures are taken to insure its safety. For negligence in this respect the corporation has been, and should be, made to pay the price of its folly."

Construction Joints of the Fridley Conduit

THE Fridley conduit of the St. Paul, Minn., water supply includes the conduit proper, the pumping station, the pumping equipment and the canal between Charles and Pleasant Lakes and the standpipe. The capacity of the conduit in the preliminary plans was fixed at 40,000,000 gallons daily. This seemed ample when it was considered that the average daily consumption in the city at that time did not exceed 25 m.g.d. and that the lake system alone would normally produce 15 m.g.d. with the well system in reserve. Later the capacity of the conduit was increased to 60 m.g.d. as a medium between first cost and future needs.

Wood stave, cast iron, steel and reinforced concrete were considered as the material of which the conduit could be constructed. A continuous wood stave pipe would have entailed the lowest first cost. Soil conditions, however, eliminated it. Cast iron pipe was prohibitive owing to the handling cost. Steel pipe covered with a special coating of a semi-rubber base was used for the first 8,150 feet where the head was comparatively high. First cost, anticipated useful duration, maintenance, leakage, soil conditions, dependability under railroad tracks, were taken into consideration in making the decision. The remainder of the conduit, a distance of 33,107 feet, is of reinforced concrete, which was less in first cost than steel and about double the cost of wood-stave pipe.

The construction joints on the reinforced concrete pipe consist of a plain copper ring, 9 inches wide, placed in the center of the concrete wall. On the inside face of the conduit ring there was molded by means of an aluminum form a depression 1 inch deep and 6 inches wide with a center V-shaped groove. The V-groove was then filled with a soft asphalt and the 1-inch depression was filled with a cement grout reinforced with hardware cloth. The idea was to permit movement and still have it watertight. Over the grouting were placed asphalt and a layer of saturated cotton fabric. The joints were placed every 20 feet. The longitudinal joints between the invert and the crown section have given no trouble, and no leaks have been discovered. A very simple joint consisting of a groove in the invert was used. The steel forms for the crown section permitted grout to flow down over the joint, which aided in sealing it.

LEONARD N. THOMPSON,
General Superintendent and Engineer, Water Works Department, St. Paul, Minn.

Items on Water Supply and Purification

Rainfall and Drought

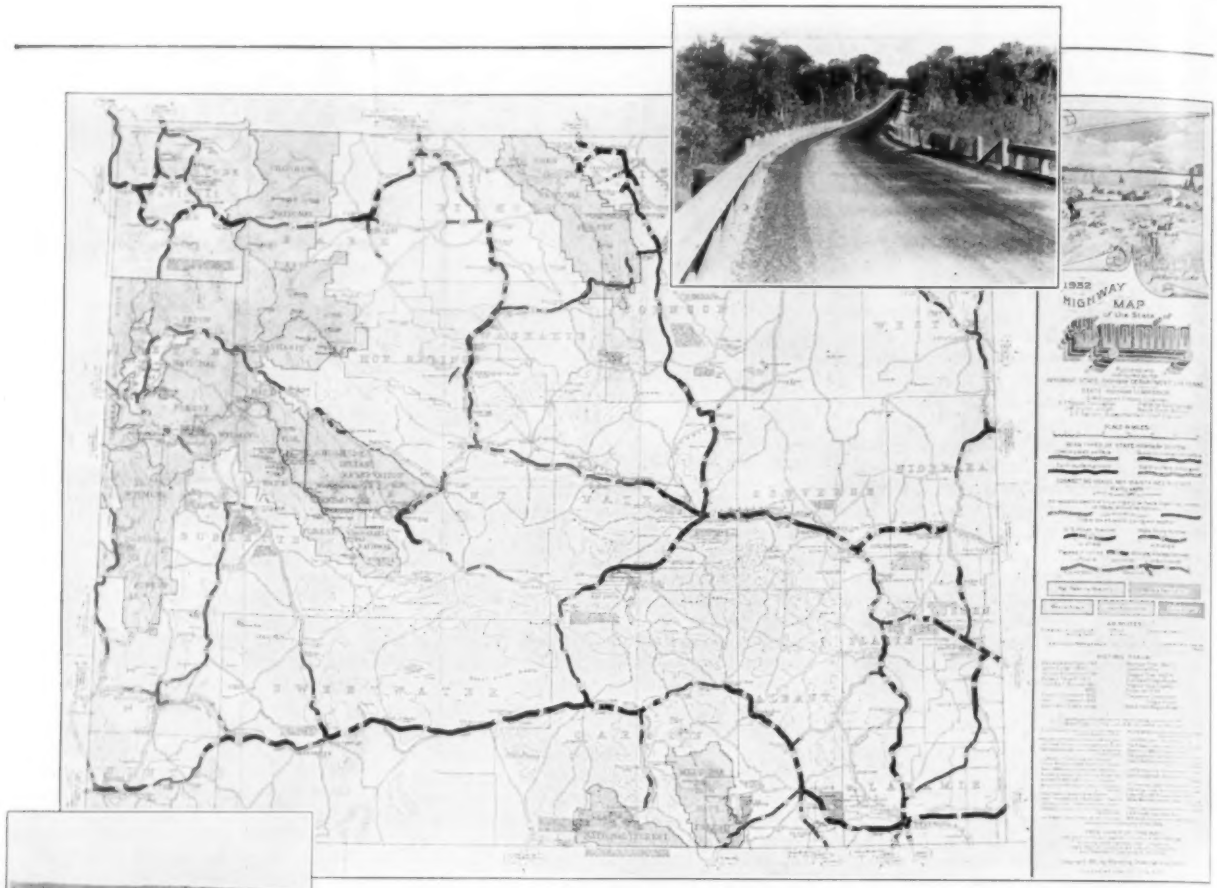
AS far back as we have any historical record, we find mention of excessive rainfall and excessive drought, but, as it is only in recent years that there have been adequate methods of measuring both rainfall and deficiency of rainfall, comments of diarists and analysts are in most cases not of much value. All the early chronicles, however, indicate that floods and droughts are not merely modern occurrences. It is recorded that in 1592 people could cross the Thames on horseback as far up the river as London Bridge. The Fugger news letters which went back and forth from England to the continent during the sixteenth centry are full of mentions of "prodigious floods"—"we have had no clear day for three months." Walpole, writing from Strawberry Hill 100 years later, humorously says, "Have had a great deal of weather—all bad."

In 1677 in the village of Townly, Lancashire, a serious attempt was made to record rainfall, and from that time to this, with few intermissions, such records have continued.

On the whole, flood conditions are better recorded than deficiencies of rainfall, although there would seem to be no reason to believe that there have been any more of one than the other. A number of theories have been evolved about weather cycles. Francis Bacon believed in a theory, which he reports came from Belgium, that there were cycles of 35 years. Others have discovered what would seem to be 11-year periods, and as yet there are no very strong items in favor of either theory.

If there is anything in the cyclical theory that every dry spell is followed by a wet one, water-works operators may be somewhat cheered to be reminded of some of the figures for record rainfall which may be an indication of what is before us. In Porto Bello, May 1, 1908, it rained 2½ inches in 3 minutes. In 1912, in the Philippines there was a record of 46 inches in one day.

REEVES J. NEWSOM,
Executive Vice-President, Community Water Service Co., New York.



Wyoming solves a difficult road building problem

INSUFFICIENT funds, together with large highway mileage requirements and a public demand for something better than gravel roads, was the problem which confronted the Wyoming Highway Commission in developing their State Highway System.

The problem was solved by constructing high grade low cost bituminous roads with durable wearing surfaces that are proving satisfactory in all respects. These roads are low in first cost and maintenance cost.

Two methods of construction for the bituminous type of oil and gravel mixed wearing surface are used. One is called "Road-Mix" or "Mixed-in-Place;" the other is the "Mechanically Pre-Mixed Method." The Wyoming engineers are building these roads, many of which have the advantage of excellent natural drainage, with an elevated grade line.

The Standard Oil Company (Indiana) furnished large quantities of the Road Oil and Cut-Back Asphalt used in the construction of this work.

Wyoming's developments in this respect should be a big help to other states that must provide roads with the smallest outlay of money possible.

STANDARD OIL COMPANY
(INDIANA) 108
910 South Michigan Avenue Chicago, Illinois

Construction and Maintenance

Engineering and Highway Departments

Single-Track Concrete Roads in the United States

DURING 1931 there were 43 counties in 11 states which constructed a total of 218.7 miles of single-track concrete road and widened 47.5 miles of single-track previously constructed. Champaign County, Illinois, practically completed a 160-mile system of county roads of single-track with the construction of 17.5 miles during the year. They are now planning an addition to the system of 130 miles.

A careful survey of single-track concrete roads in the United States shows that over 3,000 miles have been built by 207 counties. They are in successful use in all parts of the country and are found in 30 states. Their use extends from light-traffic state routes, as in Missouri, where over 530 miles have been built, to main traveled local roads where their use is most common.

Several communities have found they can double their mileage of improved road by building single-track and their experience indicates that these roads give local traffic practically full-width road service. They find that the single-track can be widened ten or fifteen years later when traffic or road revenues increase, and save all of the original investment. This has been carried out on over 500 miles of road in 13 states.

The extent of use of single-track concrete in the United States is shown by the table below. The year the first single-track road was built is also shown in each case.

SINGLE-TRACK CONCRETE ROADS IN THE UNITED STATES AS OF JANUARY 1, 1932

State	No. Counties	Date First Road Built	1931 Awards Miles	Miles Single-Track Built	Miles Single-Track Widened	Net Single-Track Remaining
Arkansas	1	1930	...	10.00	...	10.00
California	1	1916	...	5.00	...	5.00
Delaware	3	1927	26.65	88.91	...	88.91
Georgia	1	1920	...	4.65	...	4.65
Illinois	61	1911	(76.18 plus 0.82 widening)	875.30	125.56	749.74
Indiana	7	1916	2.85	43.45	...	43.45
Kansas	1	1920	...	7.99	...	7.99
Louisiana	1	1915	...	0.75	...	9.75
Maryland	6	1914	3.38	97.46	...	97.46
Massachusetts	1	1931	0.06	0.06	...	0.06
Michigan	2	1910	7.68	59.72	16.06	44.66
Minnesota	1	1912	...	0.16	0.16	...
Mississippi	6	1914	...	123.20	...	123.20
Missouri	30	1922	(68.80 plus 41.48 widening)	530.52	123.27	407.25
Nevada	1	1923	...	3.70	3.70	...
New York	14	1916	(10.37 plus 5.16 widening)	217.14	27.56	189.58
North Carolina	4	1924	...	34.70	11.60	23.10
Ohio	16	1912	0.16	324.56	88.48	236.08
Oklahoma	3	1925	...	23.18	23.18	...
Oregon	2	1921	...	78.10	...	78.10
Pennsylvania	1	1930	...	2.40	...	2.40
South Carolina	1	1924	...	12.00	...	12.00
Tennessee	3	1919	...	45.63	30.75	14.88
Texas	9	1912	19.61	200.80	...	200.80
Utah	1	1923	...	2.00	...	2.00
Virginia	1	1931	3.41	3.41	...	3.41
Washington	7	1914	3.66	71.74	2.59	69.15
West Virginia	4	1916	...	65.93	27.30	38.63
Wisconsin	17	1912	...	76.50	30.18	46.32
Wyoming	1	1921	...	0.45	...	0.45
Totals, 30	207		218.71 plus 47.46 widening	3,000.41	509.39	2,500.02

Sunset Boulevard Construction in San Francisco

SUNSET Boulevard, San Francisco, occupies the entire 240-foot block between Thirty-sixth and Thirty-seventh Avenues. It is centrally located, 2.1 miles in length, and a southerly extension 0.4 miles in length leads to a junction with the boulevard around Lake Merced. The work was divided into five sections, A, B, C, D and E, to facilitate construction. Section A, 1,500 feet in length, was undertaken by crews mobilized to relieve unemployment. The clearing of extensive groves of eucalyptus trees was first undertaken, and was followed by a small amount of grading. After this a contract for $169,339.70 was awarded to the Mission Concrete Co., for construction of the Sloat viaduct, which provides a cloverleaf grade separation.

Section B, 3,400 feet in length, was awarded to Meyer Rosenberg for $83,766. Section C, 3,400 feet long, was awarded to the California Construction Co., for $103,844. Section D, also 3,400 feet in length, was awarded to the California Construction Co., for $104,276.

Section E, 1,000 feet long, involved a grade separation by means of a concrete viaduct at Lincoln Way. As a preliminary to this viaduct construction, it was necessary to divert the 6-foot 6-inch circular sewer at Lincoln Way.

Provision was made throughout this construction so that the roadways can be widened to 50 feet in the future. The roadways are edged with unarmored concrete curbs. The minimum radius of curb returns is 25 feet. The roadway pavement consists of a 2½-inch asphaltic concrete wearing surface on a 10-inch waterbound macadam base constructed in two 5-inch courses. The asphaltic concrete wearing surface was spread and finished with a mechanical spreader. The 15-foot pedestrian path is paved with 4-inch waterbound macadam with redwood headers. The equestrian path is similar to the walks, except that the waterbound macadam pavement is 6 inches in thickness. The parking area which is being developed under the direction of the Park Commission, is covered with 8 inches of loam and 1½ inches of manure.

M. M. O'SHAUGHNESSY,
City Engineer.

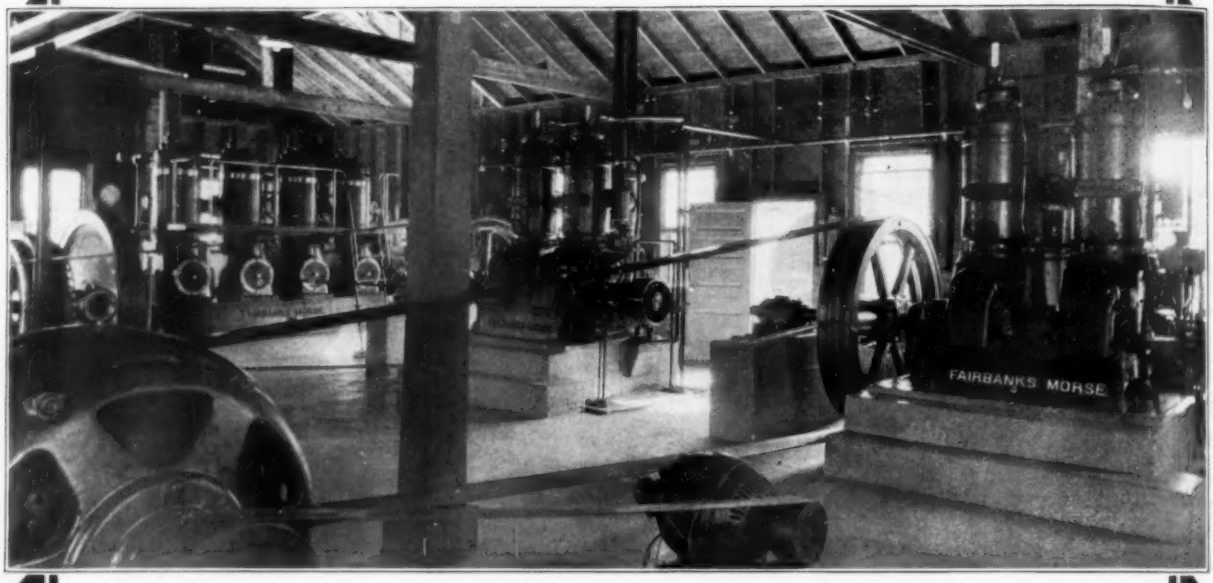
Talkies on U. S. Highways Available

A SIX-REEL motion picture in sound scored to music by the Marine Band Orchestra, and titled, "An International Study of American Roads," has been released by the U. S. Department of Agriculture. The film shows the extent of the highway system of the United States, building highways and highway engineering activities. The selection of various types of road surfaces designed to meet the needs of traffic, the effects of pneumatic and solid tires, weight and speed of vehicles, the use of locally available materials for road building, and the service of the highways, are portrayed.

In an introductory speech, Thomas H. MacDonald, Chief of the Bureau of Public Roads, expresses the hope that this motion picture will promote understanding in the road-building fraternity in the United States and in the world generally. The titles have been prepared in three foreign languages and it is intended to supply prints to the many countries that sent delegates and representatives to the Sixth International Road Congress, held in Washington, in October, 1930.

This film is primarily intended for road builders and is a standard 35-mm. sound-on-film. It is loaned by the Office of Motion Pictures, U. S. Department of Agriculture, Washington, D. C., to responsible borrowers paying transportation charges.

Memphis, Missouri
PAYS OFF DEBT AND REDUCES TAXES
with F-M Diesels



MEMPHIS, MISSOURI, (population 2000), installed its first municipally owned light plant in 1918. Starting originally with a 75-hp. F-M Diesel, this plant soon caused a privately owned steam plant to cease operations.

Today the plant has grown to include two 75-hp. and one 240-hp. F-M Diesels. From its revenues, the city has purchased a water reservoir, a 63,000-gallon water tower, fire fighting equipment, paving of several important streets, 34 whiteway lights and 175 street lights.

Since 1922, a bonded indebtedness of $65,000 has been reduced to $20,000, making possible a reduction in tax levy from 78c to 50c per hundred. On the present basis of earnings, it is estimated that in a short time the need for city revenue taxes will be entirely eliminated by reason of the income from the plant. *Electric light and power rates are as low as in any city in Missouri of equal size.*

In addition to its cash earnings, the F-M plant is furnishing the city current for pumping water and street lighting *free.* During the last fiscal year, these services, if paid for by the city, would have meant an increase in taxation of 40c to 45c per hundred. The cash value of these free services is placed at $8200 per year.

Memphis is a city that has found the way to meet rising demands for city services with lowered tax rates.

City executives and citizens can secure accurate data on municipal operation of light plants by writing

FAIRBANKS, MORSE & CO.
900 S. WABASH AVE., CHICAGO
32 branches at your service throughout the United States

FAIRBANKS-MORSE
diesel engines

5730-OA98.74

R. G. YAXLEY
Supt., Water Works
Waterford, N. Y.
(Appointed 1921)

CHARLES P. ABRAHAM
Supt., Bureau of Water
Lancaster, Pa.
(Appointed 1930)

GEORGE B. GUILD
Supt., Crystal Water Co.
Danielson, Conn.
(Appointed 1919)

FRANKLIN HENSHAW
Mgr., Scarsdale Water Dept.
Scarsdale, N. Y.
(Appointed 1921)

WILLIAM H. CLARK
Supt., Water Works
Avon, N. Y.
(Appointed 1903)

Who's Who in Water Supply

One of a Series of Portraits of Water Works Officials Which Has Appeared Monthly Since January, 1928

Photograph by Bachrach
LEON A. GOODALE
Water Commissioner
Worcester, Mass.
(Appointed 1929)

LEONARD POWERS
Supt., Water and Light Depts.
East Grand Forks, Minn.
(Appointed 1929)

HARRY M. JOHNSON
Supt., Anaconda Water Co.
Anaconda, Mont.
(Appointed 1913)

EDWARD J. JUDKINS
Supt., Water Works
Franklin, N. H.
(Appointed 1928)

GEORGE ELVORD ROBINSON
Supt., Water Works
Canastota, N. Y.
(Appointed 1912)

CLARENCE M. RAINEY
Supt., Water Works
Pocatello, Idaho
(Appointed 1921)

ALBERT R. DAVIS
Supt., Water Dept.
Austin, Texas
(Appointed 1921)

E. L. STRANGE
Supt., Water Works
Corvallis, Ore.
(Appointed 1911)

EUGENE A. MAHONEY
Supt., Water Works
Albion, N. Y.
(Appointed 1915)

Liquid Chlorine

Progressive municipalities find it economical to use Liquid Chlorine for sterilizing water supplies and sewage effluents. When applied in sufficient quantities it will destroy pathogenic organisms and afford a positive measure of safety to the municipality.

Prechlorination is an additional bacterial safeguard and an oxidizing and catalytic aid in permitting better coagulation and sedimentation.

"Ponding" of trickling filters can be effectively relieved by periodic chlorination of the applied water.

Pennsylvania Salt Manufacturing Co.

Chemicals for Industry

EXECUTIVE OFFICES, WIDENER BUILDING, PHILADELPHIA, PENNSYLVANIA

Representatives: New York, Pittsburgh, Chicago, St. Louis

Works: Philadelphia and Natrona, Pa., Wyandotte and Menominee, Mich.; Tacoma, Wash.

Sewage Treatment Means Clean Streams

SEWERAGE and SEWAGE DISPOSAL

Three Groups Consider Costs of Sewage Treatment vs. Stream Pollution

THERE is a growing demand for sewage disposal as a means of eliminating objectionable river pollution. This demand has been productive of extended discussions in various conferences, conventions and press notices during the past year. Three parties seems to have sprung into existence. The first has for its motto "Purity at any price." It includes the most enthusiastic members of conservation and sportsmen's organizations. The second party operates under the slogan, "Purity if we can afford it," and includes the great mass of citizens who appreciate the value of decent conditions but who must be shown that these conditions can be secured at a cost within their means before endorsing the movement. The third party uses as its text, "Let the fisherman go elsewhere." Its members are unalterably opposed to sewage treatment or stream purification, and they use the same line of reasoning that was so popular a few years ago among the opponents of the good roads movement when they kept more than one state in the mud under the banner of "Why build roads for tourists?"

The "Purity at any price" party represents a relatively small group. It labors under the delusion that the clear stream water of a hundred years ago before the prairie sod was turned to cornfields can be returned by some magic touch. They lay great stress on the value of fish life in the streams, whereas fish life should be considered chiefly as an indicator of the condition of the stream. In other words, if pollution is severe enough to exterminate fish life, the water is dangerous for human contact or use. The type of propaganda circulated by the "Purity at any price" group furnishes the opponents of sewage treatment with most of its ammunition: rash statements of enthusiasts are refutable, and are selected by opponents to represent the chief claims of benefit of the advocates of stream purification. Pioneer conditions for the sportsmen cannot be returned. Abundant fish life is desirable, but not economically essential. This phase of the problem is incidental only to the major question of public health.

Probably it is safe to say that the great majority of citizens belong to the second class, that is, they would like a reasonable purification of streams, if it is procurable at a reasonable cost. They would like to see their streams returned to a condition not repulsive to sight nor offensive to nostrils; streams safe for recreation, not hazardous to the public health; they would like streams susceptible to use as public water supplies when given reasonable treatment, provided such benefits can be procured at a cost in line with similar demands of a progressive people.

As to the opposition group, much may be said. Their oft-repeated slogan, "Let the fisherman go elsewhere," is typical of opposition parties. True, stream purification will benefit the fisherman, since good roads do benefit the tourists, but who will now say that the benefit to the tourist is any more than a minute incident as compared with the general benefit to the state. Yet that argument kept many a state in the mud for years, and a variation of it probably will keep our streams putrid for many years.

The opposition would have you believe that the idea of sewage treatment is new and untried. They neglect to tell that, for example, out of 321 Iowa cities and towns having sewer systems, 217 already treat their sewage. They neglect to publish the fact that 64 per cent of the population of Iowa in second-class cities and towns served by sewer systems is also served by modern treatment works. They neglect to tell you that taxes in the same 217 progressive communities compare very favorably with those in cities now so strenuously opposing such a measure as impracticable and prohibitively expensive.

—From a paper presented before the Iowa Sewage Treatment Conference, Iowa State College, by Howard R. Green, President, H. R. Green Co., Cedar Rapids, Iowa.

Sewage Disposal at Holland, Mich.

THE efficiency of a partial treatment plant is determined largely by the per cent removal of suspended solids and by the per cent reduction of oxygen demand. During 1931, both of these factors in Holland were increased over former values. Sixty per cent removal of suspended solids is considered good for an Imhoff type plant. In 1930, the average removal was 65 per cent, and in 1931 68 per cent.

The use of lime continues at a low rate as started in 1928 with a pH maintained at about 7.0, which produces proper digestion with the least possible odors. The proximity of the sewage treatment plant to U. S. Route 31, one of the principal arteries into the city, warrants the utmost care and effort to reduce odors to a minimum. Further investigation into the possibility of covering the gas vents is under way. The greatest source of odors, however, seems to be the incoming sewer gas which is blown from the screen room through a grating at ground level by a revolving fan.

During 1931 a total of 3,578 cubic yards of sludge was drawn onto beds, air dried and removed, and disposed of to farmers and in some cases for use on city lawns. The sludge has fertilizing value and besides adds humus to the soil, being, therefore, particularly suited to the local sandy soil.

During 1931, the chlorinating equipment proved inadequate for applying sufficient chlorine to show a residual. A new 300-pound chlorinator is now installed and renders the effluent sterile, but preliminary tests show no residual chlorine at a feed of 300 pounds per 24 hours when sewage flow is 1.6 mgd.

JAMES DE YOUNG,
President, Board of Public Works.

Sewage Treatment in an English Wool City

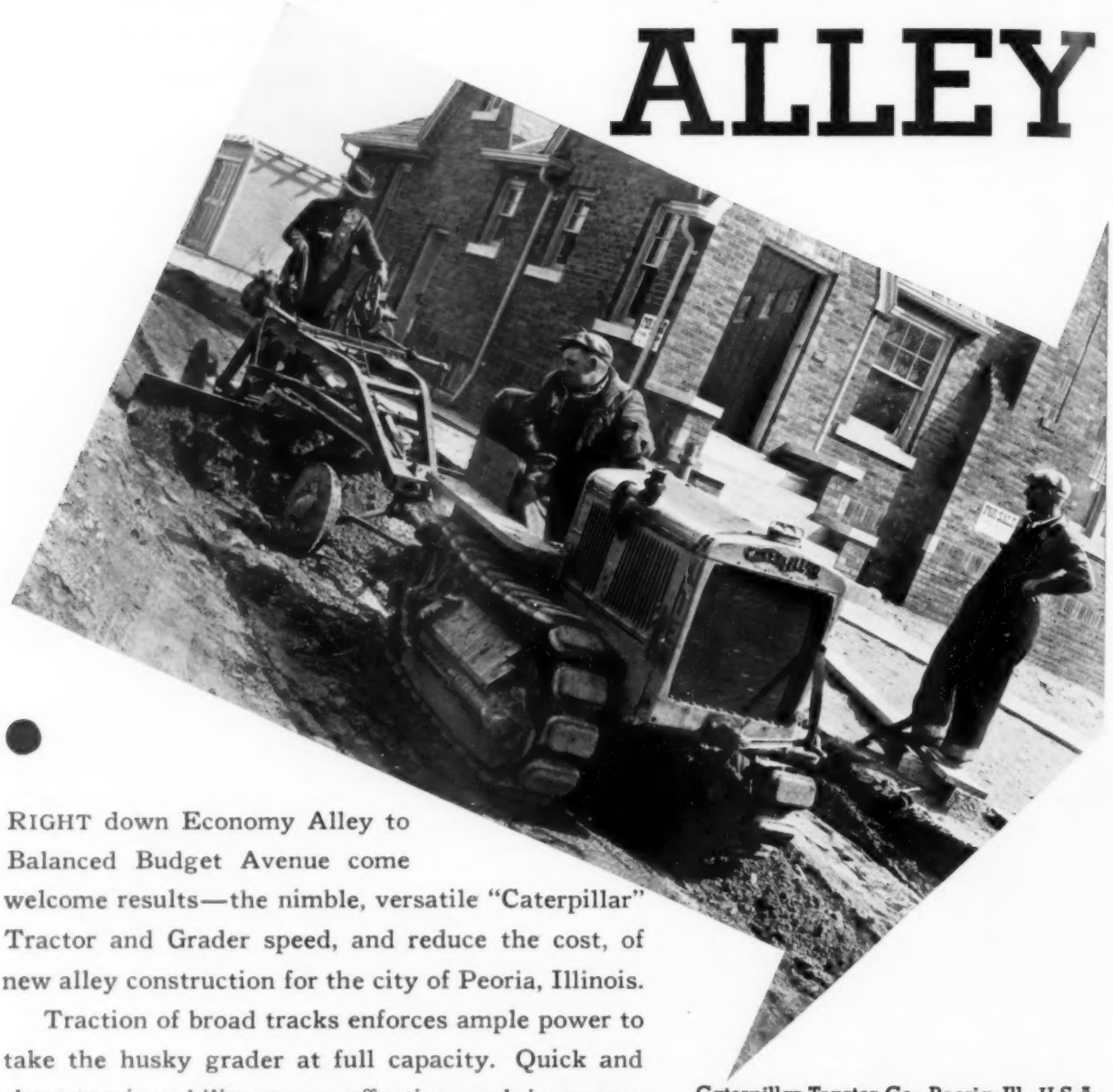
THE sewage of Bradford, England, from a population of 287,400 amounts to 23,750,000 gallons daily. The large wool-scouring industries of Bradford contribute wool-scouring wastes, all of which are now added to the domestic sewage and treated at the plant. Previously lime was used as a precipitant, but now sulphuric acid manufactured at the works is employed. The policy of requiring separate treatment of the wastes by the industry proved to be impracticable and was abandoned. The crude sewage contains 890 p.p.m. of grease, the proportion in the daytime being much higher.

The acid is added to the crude sewage to crack the soaps and to precipitate dissolved and suspended organic matters and wool waxes. Acid sewage is difficult to filter, therefore the amount of acid used is reduced to the minimum and it is employed only at times when the excess of wool wastes requires it. Best results are obtained with a pH value of about 6 for the tank effluent. The settled effluent is treated on 53 acres of filters, 6 feet deep, at the rate of 35 gallons per cubic yard daily. Hard Yorkshire coal is the filtering medium, the cheapest material available, and has proved entirely satisfactory. Such filters are potential sources of fuel in times of emergency and have actually so served. The calorific value is not affected by long years of service in the beds.

All the sludge from detritus and precipitation tanks is pressed for grease extraction after heating in large vats by steam coils. It has been found that the grit is a valuable component of the sludge-pressing compound, as well as the paper and fibrous floating matter; hence, preliminary screens are not used. The liquid grease and water is discharged through the cotton cloths of the filter presses. The press-cake is stored and dried for a year in the open and is of value as a fertilizer.

—Prepared by J. K. Hoskins from a recently revised booklet issued by the city of Bradford, England, on the construction and operation of its sewage disposal works.

RIGHT DOWN ECONOMY ALLEY



RIGHT down Economy Alley to Balanced Budget Avenue come welcome results—the nimble, versatile "Caterpillar" Tractor and Grader speed, and reduce the cost, of new alley construction for the city of Peoria, Illinois.

Traction of broad tracks enforces ample power to take the husky grader at full capacity. Quick and short turning ability means effective work in narrow quarters. Tomorrow the outfit may be improving park drives—or leveling the city dump—or smoothing side streets—or removing fire hazards. Next winter it'll plow snow from mile after mile of sidewalks.

Pride of administration—gratitude of the property owners—approval of taxpayers—month after month, year after year, "Caterpillar" Tractors and Graders win these things serving progressive cities.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.
Track-type Tractors Road Machinery
Combines
(There's a "Caterpillar" Dealer Near You)

Prices—f. o. b. Peoria, Illinois

FIFTEEN	$1100	THIRTY-FIVE	$2400
TWENTY	$1450	FIFTY	$3675
TWENTY-FIVE	$1900	SIXTY-FIVE	$4350
DIESEL	$6500		

CATERPILLAR
REG. U. S. PAT. OFF.
TRACTOR

HENRY J. BAUM
City Engineer
Altoona, Pa.
(Appointed 1921)

T. H. SWITZER
County Surveyor
Tulare Co., Visalia, Calif.
(Appointed 1929)

GEORGE H. SARGENT
City Engineer
LaGrange, Ga.
(Appointed 1913)

J. J. HALBERT
City Engineer
Jackson, Miss.
(Appointed 1928)

A. A. McPHERSON
County Highway Engineer
Aitkin County, Aitkin, Minn.
(Appointed 1927)

Who's Who in City & County Engineering

One of a Series of Portraits of Engineering Officials Which Has Appeared Monthly Since April, 1928

J. M. GARRETT
City Engineer
Montgomery, Ala.
(Appointed 1924)

CHARLES A. FRENCH
City Engineer
Laconia, N. H.
(Appointed 1906)

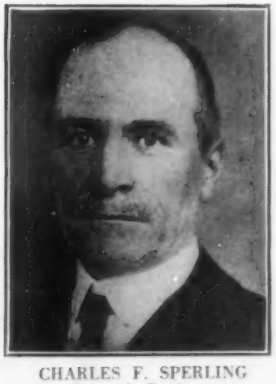
CHAUNCEY A. REESE
City Engineer
Easton, Pa.
(Appointed 1912)

LYONS MUSSINA
City Engineer
Williamsport, Pa.
(Appointed 1919)

JOHN A. JONES
City Engineer
Lewiston, Me.
(Appointed 1884)

E. BRADLEY ABBOTT
City Engineer
Gardiner, Me.
(Appointed 1928)

HENRY W. FOSTER
City Engineer
Westbrook, Me.
(Appointed 1920)



CHARLES F. SPERLING
Borough Engineer
Wilkinsburg, Pa.
(Appointed 1897)

WATSON WALKER
City Engineer
Macon, Ga.
(Appointed 1925)

Bargains in public works

that provide employment *without increasing taxes*

Water works improvements are on the bargain counter. Materials and labor costs are abnormally low. For every dollar spent on water works construction to create employment, your city can now get nearly an *extra dollar's worth* of permanent, income-producing improvements.

Water works improvements pay their way—they do not increase taxes. These easily ascertainable facts have not been generally understood by taxpayers and bankers. Consequently over half-a-billion dollars' worth of necessary water works construction is now being held up. Yet practically every city, town and village needs water works improvements and will have to provide relief for unemployed this fall and winter.

Direct unemployment relief is an expense which must add to taxes. Providing employment by water works construction does *not* represent expense, does *not* increase taxes. It represents permanent improvements to a self-supporting municipal service.

An army of men can be put to work overnight by starting water works construction long deferred and for which plans are ready. Urge your city officials to adopt this thrifty common-sense program.

Laying cast iron mains further assures civic thrift for they last longest. Cast iron pipe's useful life is over a century. The reason for the long life of cast iron pipe is its effective resistance to rust. Cast iron is the one ferrous metal for water and gas mains, and for sewer construction, that will not disintegrate from rust. This characteristic makes cast iron pipe the most practicable for underground mains since rust will not destroy it.

For further information, write to The Cast Iron Pipe Research Association, Thomas F. Wolfe, Research Engineer, 122 South Michigan Avenue, Chicago, Ill.

CAST Q IRON

Look for the "Q-check" symbol as shown above. It is the registered trademark of The Cast Iron Pipe Research Association.

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CAST IRON PIPE

When you write for that catalog, kindly mention THE AMERICAN CITY

METHODS and COSTS of REFUSE COLLECTION and DISPOSAL

Inglewood, Calif.

A contractor paid by the city of Inglewood, population 19,480, uses a fleet of motor trucks for the collection of the garbage and delivers it to a hog farm for disposal.—Department of Health.

Long Beach, Calif.

The city of Long Beach, population 142,032, collects the garbage throughout the city, using three Chevrolet and one Ford Model A trucks of 4-yard capacity, twenty 4-yard Lee trailers and twelve Fordson tractors. The garbage is sold to a hog feeder for $1.55 per ton.—W. S. Fowler, Superintendent of Sanitation.

Lynwood, Calif.

A contractor paid by the city collects the garbage in Lynwood, population 8,021, using three motor trucks. The contractor is responsible for disposal of the garbage.—R. W. Anderson, City Clerk.

Maywood, Calif.

The city of Maywood, population 6,794, pays a contractor for the collection of garbage. This contractor uses one 4-ton motor truck and disposes of the garbage on a hog farm at Bellflower. —Chas. L. Hollar, City Clerk.

Montebello, Calif.

The city of Montebello, population 5,498, pays the contractor for the collection and disposal of the garbage. The contractor uses one 2-ton motor truck and delivers the garbage to a hog ranch for disposal.—J. P. Walker, City Clerk.

Monterey, Calif.

The city of Monterey, population 9,141, arranges for the collection and disposal of garbage by a contractor, who is paid by the individual householder. The contractor uses two 2-ton motor trucks and disposes of the garbage by dumping it in pits along the sand dunes outside the city, where it is burned as completely as possible and then covered with sand.—R. M. Dorton, City Manager.

Manchester, Conn.

The town of Manchester, population 21,973, collects the garbage, using three 2-yard trucks. The garbage is taken to a dump and covered with gravel.—G. H. Waddell, Town Treasurer.

Meriden, Conn.

The city of Meriden, population 38,481, collects the garbage, using four 3-ton motor trucks. The garbage is used for filling in low lands outside of the city limits.—James A. Toner, Superintendent of Public Works.

Seymour, Conn.

The town of Seymour, population 6,890, collects the garbage throughout the corporate limits, using two motor trucks.—H. F. Mannweiler, Selectman.

Shelton, Conn.

The city of Shelton, population 10,113, arranges with a contractor, paid by the city, to collect all the garbage. The collector uses one 2-horse wagon and one motor truck for this purpose and disposes of the garbage on a local dump.—City Health Department.

Stafford Springs, Conn.

In Stafford Springs, population 3,492, the garbage is collected by a two-horse wagon owned by a contractor, who is paid by the individual householders. The garbage is carried out of the borough and fed to hogs. Boxes, paper and waste are carried to the public dump by several individuals hired by the storekeepers and householders. During the summer the combustible material is burned on iron grates.—George Towne, Superintendent of Streets.

West Haven, Conn.

A contractor paid by the town of West Haven, population 25,808, collects the garbage in four large wagons. It is disposed of by feeding to hogs owned by the contractor.—Elmer E. Scranton, Clerk, Board of Selectmen.

Winsted, Conn.

Thre contractors, paid by the householders, collect the garbage in Winsted, population 7,883, using one long body wagon and two box body trucks, one a Chevrolet and the other a Ford. The garbage is disposed of on a local dump. —W. C. Kemp, Mayor.

Fort Lauderdale, Fla.

Fort Lauderdale uses three 10-yard trucks for garbage collection in the tourist season (population 15,000); two 10-yard trucks in summer (population 8,666). The garbage is disposed of in a Nye incinerator.—Chas. L. McClelland, Superintendent, Sanitary Department.

Lakeland, Fla.

The city of Lakeland, population 18,554, collects the garbage with four motor trucks, three with 160-cubic-foot bodies, one with 230-cubic-foot body. Two of the smaller trucks pull trailers. The garbage is incinerated.—Irving S. Tillotson, City Engineer.

Miami Beach, Fla.

Miami Beach, population 6,494, collects the garbage with three 7-yard motor trucks and disposes of it in the municipal incinerator.—F. H. Henning, Superintendent, Sanitary and Health Department.

Pensacola, Fla.

Pensacola, population 31,579, arranges with a contractor for the collection of all garbage. The contractor uses five 2-ton trailer motor trucks and disposes of the garbage by burning or burial in pits.—George J. Roark, City Manager.

Cincinnati, Ohio

The city of Cincinnati, population 451,160, has one of the most complete municipal garbage and rubbish collection systems in the country. The city owns all the equipment for collection, which includes twenty-five 3-ton GMC trucks of 8-yard capacity, six 1½-ton GMC trucks of 3-yard capacity, fourteen Model 10-20 McCormick Deering tractors, fourteen Model A6 International Harvester truck tractors, fourteen Highway semi-trailers of 2½-ton or 6-yard capacity, three 1½-ton Studebaker trucks of 3-yard capacity, three 3-ton Biederman trucks of 8-yard capacity, three 5-ton Biederman trucks of 10-yard capacity, and sixty-two 4½-yard capacity Highway trailers used in connection with the McCormick Deering tractors and semi-trailers. The garbage is all disposed of by incineration.—Ralph C. Taylor, Assistant Superintendent, Waste Collection Division.

Madison, Wis.

The city of Madison, population 57,889, collects the garbage, using two 5-yard, 3½-ton trucks for unwrapped garbage and eleven 5-yard trailers and one 5-ton tractor truck which hauls the trailers in two separate trains. The garbage is disposed of by feeding to hogs.—E. E. Parker, City Engineer; Superintendent of Garbage Collection.

Rhinelander, Wis.

In Rhinelander, population 8,019, the garbage is collected by a private collector paid by the individual householder. The garbage is disposed of by dumping.—T. M. Wardell, City Manager.

Two Rivers, Wis.

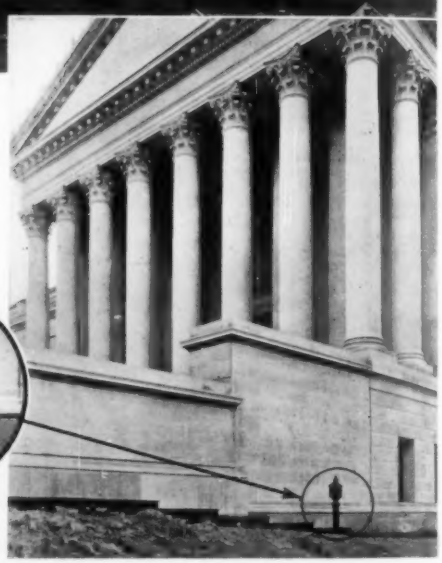
A contractor paid by the city of Two Rivers, population 10,082, collects the garbage, using two 8 x 15-foot wagons. He disposes of the garbage by dumping in low spots and covering with sand.—John P. Hoffman, Jr., City Clerk.

WEST VIRGINIA *protects* NEW STATE CAPITOL

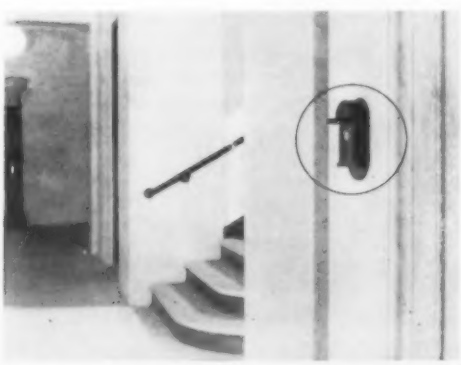
with a GAMEWELL REMOTE CONTROL FIRE ALARM SYSTEM

West Virginia's magnificent new $9,000,000 capitol — *one of the finest in the country* — replaces one that was completely destroyed by fire several years ago. So quickly did that fire spread, that it was impossible to save many of the priceless State records.

Quite naturally, when this new capitol was planned, great care was used to protect against a recurrence of that disastrous fire. The rapid spread of the flames in the old capitol emphasized the necessity of a prompt alarm. Consequently, the quickest and most reliable fire alarm protection available was installed in the new capitol building — a Gamewell Remote Control Fire Alarm System. It requires no local battery and consists of a MASTER type municipal fire alarm box on the outside of the building, connected to thirty-eight remote control stations located at exit points throughout the marble corridors.



This Gamewell master fire alarm box can be operated for a fire from a remote Control Station within the Capitol.



No time is lost in sending an alarm through any of the thirty-eight Remote Control Stations within the building.

By simply "pulling" any one of these remote control stations, an alarm is sent instantly ***direct*** to the municipal fire department through the MASTER model fire alarm box just outside the building.

Every federal, state, county and municipal building housing human beings or valuable records should be protected by a Gamewell municipal fire alarm connection. It is the most direct, efficient and economical available today.

Write for a copy of our catalog leaflets No. L-2002 and No. L-2009

THE GAMEWELL COMPANY

NEWTON, MASSACHUSETTS

Fire—Police—Safety Items

of Interest to Departments of Public Safety

Police, Radio and Telephone

A CAMPAIGN offering the individual citizen an opportunity to enlist in the war against crime by using his telephone to furnish the Police with information regarding criminal activities, to be broadcast over the Department's radio system, has been launched by Police Commissioner Edward P. Mulrooney of New York City. More than 100,000 posters have been distributed and the same number of booklets, asking the public to use the telephone quickly in the case of an emergency and telling the citizen how to cooperate with the Police Department in an effort to make the radio system a highly effective instrument in criminal apprehension.

Instructions for sending in an alarm are published in detail because, despite the efforts to make it easy for citizens to notify the department by telephone, many fail to send in any alarm at all until they have used very ineffective methods of coping with the situation themselves.

"Many crimes, costing lives and thousands of dollars, might be prevented by the police and the criminals caught," the Commissioner says in the booklet, "if the law-abiding citizen would immediately let the police know of any suspicious actions he observes. . . . You are familiar with your neighborhood. When something looks suspicious, don't wait until damage has been done. The police are always glad to investigate, if only to relieve your anxiety."

Such advice, police executives say, has a two-fold value. If followed, it insures the reporting not only of actual crimes but of crimes in the planning, and in addition, it abolishes the fear in the citizen's mind of the consequences of sending in a false alarm.

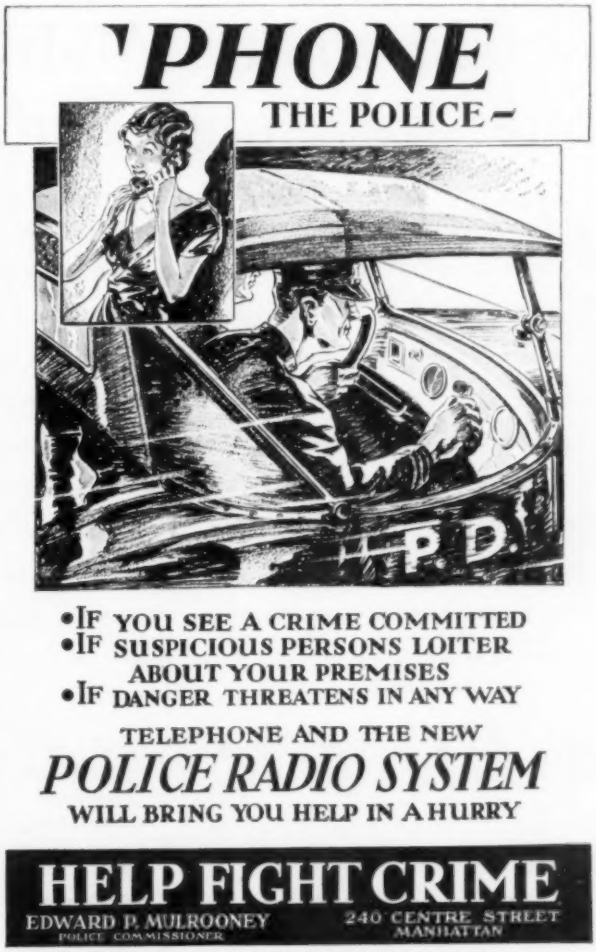
A great number of false alarms would seriously impair the functioning of the radio system, perhaps, but the department relies upon the judgment of the ordinary citizen to keep these at a minimum, realizing that one real alarm where the criminals are caught is sufficient reward for many fruitless classes.

In the larger sense, the department's program to enlist the cooperation of the individual citizen in the war against crime fits in with its other crime prevention activities, such as welfare work providing recreation and amusement for the city's tenement children, the organization of boy's baseball clubs, etc. In New York, police executives say, one of the most serious problems is the indifference of the public. The "'Phone the Police" program is designed to strike at the heart of this problem.

During the fall additional posters of the type generally distributed will be placed in the public and parochial schools, and booklets distributed to the school children. The Commissioner also has arranged for displaying the posters in subway stations and cars, and during the next few weeks he expects to enlist the aid of theater managers in the campaign, so that the instructions may be displayed on the screen before movie audiences.

During the first three months of operation the new radio system resulted in a total of 131 arrests in 73 cases, official reports of the department show. Half of these were hold-ups, robbery, larceny and burglary cases. The arrests up until July 15 totaled well over 300, and the same percentage of serious crimes holds.

Commenting on this, Commissioner Mulrooney says: "It is safe to say that 75 per cent of these criminals would have escaped at the time except for the radio motor patrol plan which brought the police quickly to the scene."



THE NEW YORK CITY POLICE POSTER

Wisconsin's Fire Course

THE fourth annual Wisconsin Course in Firemanship, offered jointly by the Wisconsin Industrial Commission, the state fire chiefs' and firemen's associations and the University of Wisconsin Extension Division, held June 21-24 at Madison, was attended by firemen from more than 75 cities and villages of the state. An excellent program added to the credit of this course as one of the outstanding state-wide activities in the interest of firemen's training.

Traffic-Law Enforcement Month

IN order to demonstrate the effect of vigorous traffic-law enforcement in reducing accidents in cities of all sizes and in all parts of the country, the National Safety Council, 20 North Wacker Drive, Chicago, will conduct a nation-wide "Traffic-Law Enforcement Month" in September.

The following cities were enrolled by July 25:

Madison, Wis	Elizabeth, N. J.
Peoria, Ill.	Louisville, Ky.
Lincoln, Nebr.	Memphis, Tenn.
Davenport, Iowa	Fort Worth, Texas
Schenectady, N. Y.	Dubuque, Ia.
Enid, Ohio	Pasadena, Calif.
Kokomo, Ind.	Cincinnati, Ohio
Detroit, Mich.	Flint, Mich.
Wichita, Kans.	Topeka, Kans.
Grand Rapids, Mich.	Honolulu, T. H.
Baltimore, Md.	Dayton, Ohio
Saginaw, Mich.	Evanston, Ill.
Canton, Ohio	Hammond, Ind.
Savannah, Ga.	Akron, Ohio
Indianapolis, Ind.	Gary, Ind.
Oakland, Calif.	Houston, Tex.
Erie, Pa.	Utica, N. Y.
Salt Lake City, Utah	Toledo, Ohio
Marion, Ind.	Chicago, Ill.
Birmingham, Ala.	Mason City, Ia.
Allentown, Pa.	Denver, Colo.
Hartford, Conn.	St. Paul, Minn.
Portsmouth, Ohio	Rochester, N. Y.
Berkeley, Calif.	

The results will be reported directly to the headquarters of the annual Safety Congress to be held this year in Washington, D. C., October 3-7.

Modern campaign methods GET THE VOTES!

13A Portable Public Address System in use—lapel microphone on speaker's clothing (indicated by arrow)—loud speaking telephone (indicated by circle).

A 13A Portable Public Address System enables your constituents to HEAR you *clearly!*

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LOOK OVER THESE New CATALOGS

THE AMERICAN CITY should always be mentioned when writing for this material which is furnished free. Keep your files up to date by checking over these items each month and writing for those you need.

A NEW MODEL 5-7-TON ROLLER

894. In Bulletin AD-1256, the Austin-Western Road Machinery Co., 400 N. Michigan Ave., Chicago, Ill., describes the latest Austin Cadet roller, which is a brand-new model patterned more closely than ever after the well-known Austin double-spur gear-drive Autocrat.

HANDLING WATER-WORKS CHEMICALS PNEUMATICALLY

895. Bulletin A-2 issued by the Fuller Co., Catasauqua, Pa., describes the Airveyor, a filter type system for handling fine and pulverized materials, containing a large percentage of dust, such as soda-ash, hydrated lime and alum, which are used in large quantities in many water filtration plants.

A CENTRIFUGAL PUMP FOR HANDLING WATER-WORKS CHEMICALS

896. Hills-McCanna Company, 2349-59 Nelson St., Chicago, Ill., will be pleased to send complete information to water-works officials regarding the Hills-McCanna ball-bearing high-efficiency centrifugal pump with a maximum capacity of 100 gallons per minute, and made of satisfactory materials for handling various water-works chemical solutions.

BRICK GUTTERS AND PARKING STRIPS

897. This is the title of a 24-page illustrated booklet which contains a great deal of interesting information on the service of brick gutters and parking strips. Copies may be secured gratis from The National Paving Brick Assn., 1245 National Press Bldg., Washington, D. C.

EXPLOSIVES FOR SETTLING HIGHWAY FILLS

898. A 48-page illustrated booklet entitled 'Use of Explosives for Settling Highway Fills," describing the three generally accepted plans of procedure for accelerated fill settlement operations, supplemented with many diagrams and illustrations showing actual operations, may be secured by those interested, from E. I. du Pont de Nemours & Co., Explosives Dept., Wilmington, Del.

AN AUTOMATIC PROPORTIONING PUMP FOR CHEMICAL SOLUTIONS

899. Proportioneers, 7701 Avalon Ave., Chicago, Ill., will be pleased to send literature on the Tret-O-Unit, a new automatic proportioning pump for feeding chemical solutions in direct proportion to the requirements of a raw-water pipe line, based on the rate-of-flow through the line. The unit consists of a single plunger pump controlled automatically.

A SURE WAY TO DECREASE AUTO FATALITIES

900. Low-cost traffic control insuring a decrease in automobile fatalities is made possible by the General Sure-Stop traffic marker, made of flexible rubber which is set into the pavement, where it is seen instantly by drivers and its warning heeded. This traffic marker, which requires no paint or electric current, is described in literature which may be secured from the General Tire & Rubber Co., Dept. 26, Akron, Ohio.

SEWAGE SLUDGE REDUCTION EQUIPMENT

901. Bulletin No. 130 issued by Stedman's Foundry & Machine Works, Aurora, Ind., describes Stedman ball-bearing Disintegrators, Quadrex vibrating screens and bucket elevators for grinding, screening, and conveying sewage sludge for sale for fertilizer.

A NEW 6-CYLINDER, 1½-TON TRUCK

902. The Reo Motor Car Co., Lansing, Mich., has announced a new 1½-ton, 6-cylinder Speed Wagon equipped with a Gold Crown engine developing 68 brake horsepower at 2,800 rpm. Complete information regarding this new truck, which is priced well below $1,000, may be secured direct from the Reo Motor Car Co.

A NEW 2-TON ALL-PURPOSE TRUCK

903. Complete information regarding the Federal Model G5 2-ton motor truck, priced to sell under $1,000, the standard chassis of which weighs 3,800 pounds and carries a total allowable weight of 11,500 pounds and is equipped with a six-cylinder L-head engine, developing 72 horsepower, may be secured from the Federal Motor Truck Co., Detroit, Mich.

A HANDBOOK OF THE AMMONIA-CHLORINE PROCESS

904. Wallace & Tiernan Co., Inc., manufacturers of chlorine and ammonia control apparatus, Newark, N. J., will be pleased to send a copy of its new handbook of the ammonia-chlorine process as employed in water-works practice, containing twenty-eight 6 x 9-inch pages of valuable information on the history, chemistry, purpose and successes of the process, to any water-works official interested.

A MOTOR SICKLE HIGHWAY MOWER

905. The Rawls Mfg. Co., Streator, Ill., will be pleased to send its literature on the new Rawls motor sickle highway mower Type 31, which is the product of the cooperative assistance of many highway officials in the United States and other countries over a period of years, to any one interested.

75-GALLON ASPHALT DISTRIBUTOR

906. A small distributor with heating equipment and a power air compressor, and with a capacity of 75 gallons, which is particularly adaptable to small penetration jobs in gutters and at the end of bridge slabs and for maintenance work, is described in the literature of Littleford Bros., 500 E. Pearl St., Cincinnati, Ohio.

A NEW CONCRETE DUPLEX FILTER BOTTOM

907. The F. B. Leopold Co., Inc., 422 First Ave., Pittsburgh, Pa., has recently issued a bulletin fully describing its new concrete duplex filter bottom for rapid sand water filters. Copies of this illustrated bulletin may be secured by any water-works officials and operators interested in improving the manifold and lateral systems in water filters.

A CORROSION-PROOF EXHAUST WASHER AND SILENCER

908. The new Maxim exhaust washer and silencer Model EW for gas, gasoline and diesel engines in sizes from 2-inch to 18-inch inclusive have been announced by the Maxim Silencer Company, Hartford, Conn., as a means of reducing the noise and dirt particularly from the exhaust of diesel engines used in municipal power plants or as the prime movers of cranes, draglines and shovels.

SPACE-SAVING AUTOMATIC BLEACHERS FOR GYMNASIUMS

909. Section 2200 of the catalog of A. G. Spalding & Bros., Chicopee, Mass., describes the Spalding space-saving automatic bleachers consisting of sloping steel beams with rollers at the end carrying the seats and foot-rest, all of which are raised and lowered readily to swing up and back against the wall of the gymnasium, leaving the floor space clear.

HYDRAULIC PUMP FOR HANDLING CHEMICAL SOLUTIONS

910. Complete information regarding the Ross hydraulic booster pump for injecting chlorine, soda-ash, and alum solutions into raw and filtered water, and built especially for handling the particular type of solution required, may be secured from the Ross Valve Mfg. Co., Inc., Troy, N. Y.

LOW-BED, FRONT-WHEEL-DRIVE TRUCK

911. Complete information regarding the 5-ton low-bed front-wheel-drive truck now being made by the Four-Wheel-Drive Auto Co., Clintonville, Wis., which is particularly suitable for garbage and ash collection purposes, may be obtained by writing to the company.

Return this coupon and you will receive the catalogs requested 8-32

THE AMERICAN CITY MAGAZINE
470 Fourth Avenue, New York, N. Y.

I am interested in receiving the catalogs mentioned in Items Nos. .....
.....

Name .....Title .....

City .....State .....

A BULLETIN ON MAIN-LINE WATER METERS

912. R. W. Sparling, 945-51 N. Main St., Los Angeles, Calif., has published Bulletin 301, which gives an unusually complete description and illustrations of the Sparling main-line water meter, with the details of installation, indications of the ready adaptation of the meter to existing pipe lines, a complete easily read chart showing the accuracy of Sparling meters, the loss-of-head at all flows, the various types of rate-of-flow indicators, totalizing recorders, and remote recorders.

A TRACTOR-MOUNTED AIR COMPRESSOR

913. A 640-cubic-foot air-cooled air compressor mounted on a Model 80 Cletrac tractor in such a way as not to interfere with the drawbar work of the tractor has been announced by the Davey Compressor Co., Kent, Ohio, which will be pleased to send a complete description of the combined unit.

ATTACHMENT ELIMINATES WASHBOARDS

914. The Caterpillar Tractor Co., Peoria, Ill., has announced another highway maintenance engineering achievement in the multiple-blade arrangement for auto patrols. The multiple-blade attachment is designed to cover a swath equivalent to that obtained by the use of a standard 12-foot blade, and it cuts out the washboards, planing the surface to a smooth grade and then troweling the loose gravel uniformly back over the surface, leaving no windrow.

A HANDY UTILITY CRANE

915. A new pictorial bulletin has just been issued by the Bucyrus-Erie Co., describing and illustrating the many uses of the Loadmaster, a handy utility crane. Any of our readers interested in material-handling problems, such as the moving of pipe, stone, transformers and other materials in a municipal yard or to manholes and trenches, may obtain a copy of this bulletin by addressing the Bucyrus-Erie Co., Dept. L-90, S. Milwaukee, Wis., and mentioning THE AMERICAN CITY.

A NEW 32-PAGE TRACTOR CATALOG

916. Allis-Chalmers, Milwaukee, Wis., has released an attractive 32-page catalog which describes in detail the new Allis-Chalmers Model L track-type tractor. The general plan of the catalog is to cover one outstanding feature of the tractor on each page by means of a large illustration and brief copy. Copies of the new catalog can be obtained by writing to the Tractor Division, Allis-Chalmers Mfg. Co., Milwaukee, Wis.

WATER METERS MUST BE GOOD

917. There is a new necessity for water-meter quality, what with the increasing municipal tax rate and revenues all pledged to meet other needs. Just how Niagara and American water meters fit into this picture in insuring full revenue to the Water Department is told in the literature of the Buffalo Meter Co., 2902 Main St., Buffalo, N. Y.

MAKING TRAFFIC SAFE BY STREET LIGHTING

918. "Can you see rough paving beyond your headlights?" is a question asked by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. If there is any doubt as to how well traffic arteries should be lighted, dim your headlights and drive along a main thoroughfare. Can you clearly see pedestrians crossing the street a block away? If you can't, the street is not properly lighted. Westinghouse will gladly send literature on proper street lighting to any interested municipal officials or civic bodies.

ALL WATER LIKE MOUNTAIN SPRING WATER

919. Today the consumer takes the purity of his water as a matter of course, but he wants it palatable and without taste. Powdered Hydrodarco, an activated carbon manufactured expressly for water purification, makes all water like mountain spring water. Complete information may be secured from the International Filter Co., 59 E. Van Buren St., Chicago, Ill.

CORRECT STREET-LIGHTING GLASSWARE

920. Much of the effectiveness of street lighting depends on correctly designed globes—glassware that gives proper diffusion. Gleason-Tiebout glassware, which is scientifically designed for the specific requirements of each street, is described in the literature of the Gleason-Tiebout Glass Co., 99 Commercial St., Brooklyn, N. Y.

DON'T LOSE YOUR WATER REVENUE

921. Are you getting all possible water revenue? Are you metered properly on all services? Unless you are certain, you should investigate Trident and Lambert water meters, which are described in full in the literature of the Neptune Meter Co. and Thomson Meter Corp., 50 E. 42nd St., New York.

A FOLDING TRAFFIC SIGN

922. The A-B-C Traffic Signal Co., Coal Exchange Bldg., Scranton, Pa., will be pleased to send its folder describing the A-B-C school zone traffic signal, which calls for a full stop during the time that such traffic regulations are necessary, and when folded up merely calls attention to the necessity for continuous care by motor drivers.

THE SERVICE OF INGOT IRON PIPE

923. A 52-page illustrated booklet entitled "Long Service from Armco Ingot Iron Pipe" has recently been issued, giving valuable information regarding spiral-welded 8- to 20-inch pipe, straight seam welded 20- to 95-inch pipe, riveted 30- to 9-inch pipe, and lock-bar 20- to 72-inch pipe. Copies of this booklet may be secured from the American Rolling Mill Co., Middletown, Ohio.

A SPECIAL SIDE-DUMP BODY

924. Model 36 UB side-dump hoist with Type 459 1½-2-cubic-yard body which can be used to haul materials, and also with the sides removed and tailgate flat used as a flat-bed truck, is described in detail in Form HB-S14 issued by the St. Paul Hydraulic Hoist Co., St. Paul, Minn.

SAVING WITH THE TWO-MAIN SYSTEM

925. A brochure entitled "The Two-Main System of Water and Gas Distribution," discussing among other things the saving in cost of street openings and in service maintenance, is distributed free by The Cast Iron Pipe Research Assn., Thomas F. Wolfe, Research Engineer, 309 Peoples Gas Bldg., Chicago, Ill.

SAFE AND PERMANENT PLAY-GROUND APPARATUS

926. EverWear playground and water apparatus, which is a recognized standard of safe and permanent value for the playground and the swimming place, is described in the new catalog of The EverWear Mfg. Co., Box 103, Springfield, Ohio.

AN ALL-STEEL SLEEVE PIPE COUPLING

927. The Dayton No. 5 all-steel sleeve for water pipes, made in sizes 5⅝ to 24 inches diameter and from 16 to 48 inches in length, is described in detail in the literature of The Dayton Pipe Coupling Co., Dayton, Ohio.

STREET LIGHTING INCREASES BUSINESS

928. Adequate street lighting directly promotes retail business. Modern merchants will find that the attraction of bright lights is reflected in more customers and larger receipts. A complete report on this and other values of street lighting may be secured direct from the Lighting Division, General Electric Co., Schenectady, N. Y.

MAKE EVERY DRINK A SANITARY ONE

929. The R-S Vertico-Slant bubbler drinking fountain is strictly sanitary in that the lips cannot touch the nozzle, and therefore the stream cannot become contaminated. A catalog showing various types of this fountain may be secured from the Rundle-Spence Mfg. Co., 445 N. Fourth St., Milwaukee, Wis.

A SELF-ILLUMINATING HYDRANT

930. The Ludlow Diamond self-illuminating hydrant is described in a new illustrated folder which will be sent free to any interested officials by the Ludlow Valve Mfg. Co., Troy, N. Y.

SUBMACHINE GUNS FOR POLICE

931. Full information regarding Thompson submachine guns or semi-automatic carbines, which are used effectively by police, armored-car companies and state constabularies and which can be fired effectively either as a single-shot gun or as a full automatic or from a special mount on a motorcycle side-car, are described in illustrated literature which may be secured from Federal Laboratories, Inc., 1631 Liberty Ave., Pittsburgh, Pa.

STREETS THAT ARE AN ASSET

932. Dusty roads, and streets filled with ruts and pot-holes, are a liability which hurts the prestige of a community. Resurfacing with Trinidad Lake asphalt laid over the old worn road produces a new street which is an asset to the community. Complete information about resurfacing may be secured from The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.

NURSERY STOCK FOR SHADE TREE COMMISSIONS

933. Shade tree commissions, park superintendents and other municipal officials should get in touch with Naperville Nurseries, Naperville, Ill., when desiring hardy transplanted ornamentals, native plant materials, trees, evergreens, shrubs, perennials and rock garden plants.

A VALVE WITH DISTINCTIVE FEATURE

934. The Eddy valve, which has a number of distinctive features which it will pay a water-works man to study, is described in detail in the literature of the Eddy Valve Co., Waterford, N. Y. One of the features is that the gates are free to revolve on the trunnions so as not always to seat in the same position.

DON'T TOLERATE ROAD DUST

935. Don't ask the public to tolerate blinding, germ-laden road dust when clean, odorless, non-tracking calcium chloride ends the dust nuisance quickly. Any official interested in the calcium chloride method of dust control may secure complete literature from the following members of the Calcium Chloride Association: Michigan Alkali Co., 10 E. 40th St., New York; The Dow Chemical Co., Midland, Mich.; The Columbia Alkali Corp., Barberton, Ohio; and the Solvay Sales Corp., 61 Broadway, New York.

THE GOBLINS OF CLOGGED MAINS

936. It is true, "The goblins will get you if you don't watch out," referring particularly to the goblins of foolish fears and false economy which keeps you from insisting that your water mains be cleaned. Hundreds of cities have used The National Method of water-main cleaning and know its economy. Literature showing how The National Method has worked out in hundred of cities all over the United States will be sent promptly on request by the National Water Main Cleaning Co., 50 Church St., New York.

ASPHALT PLANK FOR BRIDGES

937. Servicised fibrated asphalt plank is giving service in hundreds of first-class installations on bridges and for industrial flooring. Prices and further information may be secured from Servicised Products Corp., 6051 W. 65th St., Chicago, Ill.

SELECTED ASPHALT PRODUCTS FOR ROAD WORK

938. Specifications of various asphalt products for special road work, and all particulars regarding their use, may be secured from the Standard Oil Co. of New York, Inc., 26 Broadway, New York. This includes cut-back asphalt, binders, paving asphalt, cold patch material, refined asphalt for sheet asphalt paving, joint fillers and waterproofing asphalt.

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The American City

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Belmont Tries Both Municipal and Contract Garbage Collection

By DANA M. WOOD
Member, Board of Health
Belmont, Mass.

THE town of Belmont, like many other municipalities, has been confronted with ills resulting from so-called "growing pains," and, among other insistent problems, has been forced to study seriously the collection and disposal of garbage. While this problem is considered to have been solved satisfactorily for the present, Belmont, like most other thickly settled communities in Greater Boston, must consider the existing arrangements only temporary, subjects to changes at almost any moment.

For many years the accepted practice was to place a fixed-sum contract for the collection and disposal of garbage, the contractor to collect with his own equipment and remove all garbage from the town. Invariably the garbage was used for hog-feed on farms in adjoining towns. Then came a period of unsatisfactory service which resulted in the collection of the garbage by the municipality, its sale at a transfer station to a contractor, who purchased the garbage and removed it from town, still for hog-feeding. Unreasonably high collection costs subsequently brought about a return to the contract system of collection and disposal. The work has always been under the supervision of the local Board of Health, and the cost has been met from the general tax.

Early History of the System

The collection and disposal of garbage was first undertaken as a municipal problem in 1898. It is supposed that prior to this the usual hit-or-miss methods of private collectors and disposal by individual householders were in effect.

Beginning May 1, 1921, a new contract was awarded for the collection and disposal of garbage, which marked the first substantial increase in the cost of doing the work, the price being $1,350 for one year, plus the garbage collected. Because the contractor was new at the business, and because he soon found that he had made too low a bid, the service became very unsatisfactory and complaints were general. At the recommendation of the Board of Health, the town voted in March, 1922, in favor of municipal collections. At the same town meeting the writer was elected a member of the Board, and since that time he has been keenly interested in the problems connected with the handling of garbage.

Beginning May 1, 1922, garbage was collected by town employees and equipment, and was sold under a three-year contract for $1,400 annually at a transfer station in Belmont; the garbage was transported to the neighboring town of Lexington and there used for hog-feeding as formerly. No record was kept of the amount collected, but it was estimated to have varied from 10 to 18 cord-feet per day.

The initial equipment consisted of one two-horse garbage wagon of 2.4 cubic yards capacity, a second similar

GARBAGE-COLLECTING VEHICLE, BELMONT, MASS., PRIOR TO 1929

GARBAGE-COLLECTING VEHICLE NOW USED, BELMONT, MASS. (1932)

unit being added in June. In 1923 a third similar unit was added, having a capacity of 3.55 cubic yards. In 1924 a Ford truck with a 1.5-cubic-yard garbage body was added. Because of lack of stable facilities, it was necessary to hire, instead of owning, two of the teams of horses.

A temporary transfer station was built, initially consisting of a large storage box with covers, placed on timber supports, and so located that incoming garbage was unloaded on an upper level into the box. A roadway at a lower level permitted the contractor's vehicles to be backed under the storage box, and the latter unloaded into them. A design for a permanent transfer station was developed, but owing to the possibility that the town might sell the proposed site, the station was never built.

In 1924 a questionnaire was sent out to numerous municipalities to obtain their costs and certain other data pertaining to garbage collection and disposal. Based upon studies of our own methods, and confirmed by a study of returns covering thirty-five municipalities, the conclusion was reached that municipal collection in Belmont was costing too much, although the service had greatly reduced the number of complaints. Furthermore, the cost of additional collecting equipment, and the construction of a permanent transfer station, would result in considerably more expense during the next few years, to say nothing of the public opposition to a suitably located transfer station. The Board therefore recommended to the town meeting of March, 1925, that a return be made to the contract method of collecting.

BOARD OF HEALTH
BELMONT,
MASS

Violation of Board of Health
Garbage Regulations

LOCATION_____ DATE_____

Your attention is called to the following item or items checked below:—

Garbage Can of insufficient size.
Garbage Can uncovered.
Garbage Can inaccessible.
Garbage Can of improper construction.
Improper material placed in can.

(OVER)

BOARD OF HEALTH RECORD

LOCATION_____ DATE_____

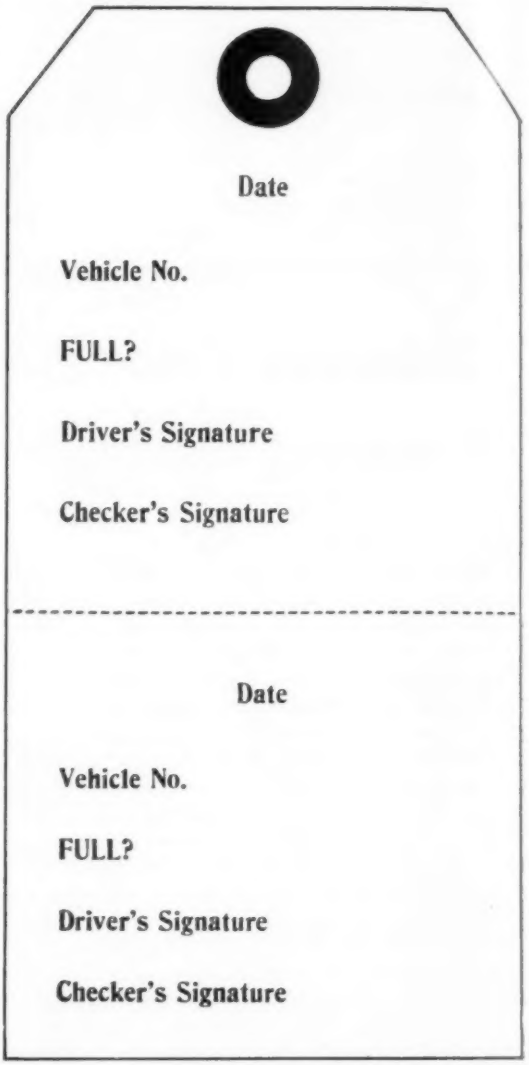
Garbage Can of insufficient size.
Garbage Can uncovered.
Garbage Can inaccessible.
Garbage Can of improper construction.
Improper material placed in can.

1st Notice _____

2nd Notice _____

Corrected _____

COMPLAINT CARD USED BY COLLECTORS



THE CHECKER'S TAG RECORD OF EACH LOAD OF GARBAGE COLLECTED

Contract Collection Resumed

Since May 1, 1925, garbage has been collected by contract as formerly, the payment, however, being on a unit instead of a lump-sum basis, as being fairer to both parties. The contractor receives an impetus to collect all the garbage he can and is furthermore protected against uncertainties due to growth of the community. The town pays in proportion to the service received. The contract has been carefully worked out to cover the matter of complaints, and even provides for such scientific studies as may be desired by the Board.

The current depression shows the need of including a sliding scale of values of garbage to the contractor based upon market prices for hogs. Our next contract will probably include such a sliding scale, thereby eliminating as many of the gambles as possible for both contracting parties. The first price was $2.25 per cubic yard collected and removed from the town until May 1, 1927, when it was reduced through competition to $1.97 per cubic yard, with a further reduction on May 1, 1931, to $1.435 per cubic yard. A checker employed by the town keeps a record of each load on a card, the men being under orders

to collect until they have a full or heaped load. The vehicles are all numbered, and their cubic contents are known from measurements. The contractor, W. G. Potter, of Walnut Street, Lexington, is giving excellent service.

Under the present plans, the contractor pays his men on the basis of one load collected each day, so planning his routing as to make a normal day's work for each. The men can start as early as they wish and can have for their own purposes the remainder of the day after their return. If, for any reason, the contractor wishes to collect more garbage, the men are requested to bring in a second load and are paid as for another day's work. The usual wage is $28 to $30 per week. The result is that the men may frequently be seen collecting as early as six o'clock in the morning and are always hustling to get their load.

The Change to Motorized Collection

The hauling distance from the farm to the center of Belmont is about two miles, and the average travel of collecting units in town is about 3½ miles, making the total mileage for a round trip about 7½ miles. At first most of the vehicles used were horse-drawn, and, according to the contractor, it required from 3 to 4 hours to gather a load, and from 4 to 5 hours to make a round trip, ¾-hour to unload, and ¼-hour to put up horses, ½-hour being required in the morning for feed and care of horses. Thus a normal collection required from 5½ to 6½ hours, but the time may be longer because of weather conditions, delays, and speed of the workers.

A truck and five double teams were first put in use, the capacities being 5.2, 3.5, 4.2, 4.6, 4.7 and 4.8 cubic yards respectively, or a total capacity of 27.0 cubic yards for all six vehicles, equivalent to 1.65 cubic yards per 1,000 population. Gradually horse-drawn vehicles were abandoned in favor of motor trucks. Those now in use have box bodies, rectangular in shape, 12 feet 6 inches long by 6 feet 6 inches wide, with 23-inch sides, or 5.8 cubic-yard capacity when level. Each truck has a driver, and two, occasionally three, collectors.

The Board cooperates with the contractor through occasional conferences. Schemes have been developed for handling the householder problem, to protect the contractor as well as the householder against abuses. A card system covering infringement of regulations has been adopted, herewith reproduced, which permits complaints from both the contractor and the householder. The contractor obligates himself under his contract to make special trips to handle complaints.

Occasionally checks are made by an independent inspector to observe the methods followed, and to prevent graft of any kind. A house-to-house canvass of conditions was once made and householders were interviewed regarding the service. The investigation required 16 days, and 4,580 calls were made. The size and type of householders' garbage cans were found to be a cause of many complaints.

Results of the Survey

In about 20 per cent of the two- and three-family houses visited, the size and number of cans were insufficient for normal requirements and might easily cause complaints by the householders of insufficient frequency of collection. The average size of container in two-family tenements was found to be five gallons for each household, having an average of four persons per family. Single-family houses averaged ten-gallon containers, families of the better type quite generally using the underground can. These families averaged five per household. The inspection further showed types of containers varying from standard makes to uncovered nail kegs; many cans were found rusted out, and in many instances covers were missing.

Concrete containers sunk in the ground and with removable pails are preferred by the contractor. The top of the concrete container should be set not less than 2 inches above the ground surface, to prevent water and melting snow from entering, and effort should always be made to prevent drainage from getting in. These containers are warmer in the winter, retarding the freezing of the garbage; and are cooler in summer, keeping the garbage in fresher condition.

Recent Statistics

A summary of the cost of collecting and disposing of Belmont's garbage during recent years is given in the following table:

AMOUNT AND COST OF GARBAGE COLLECTED AND REMOVED

	1926	1927	1928	1929	1930	1931
Population as of July 1	16,340	17,201	18,061	18,922	22,031	23,320
Tons per working day	11.9	13.4	14.7	*	15.4	17.4
Cubic yards per working day	22.0	24.8	27.3	*	28.6	32.2
Cubic feet per 1,000 population per day	30.1	32.4	33.8	*	29.1	30.9
Pounds per capita per year	440	472	495	*	425	452
Pounds per 1,000 population per day	1,208	1,292	1,351	*	1,162	1,240
Cost per cord-foot	$1.36	$1.23	$1.18	*	$1.17	$0.954
Cost per cubic yard	2.29	2.07	1.99	*	1.98	1.61
Cost per net ton	4.24	3.83	3.69	*	3.66	2.98
Cost per capita	0.935	0.905	0.912	$0.895	0.779	0.672

* No records.

NOTE: Cord-feet and cubic yards computed from measured dimensions of each vehicle. Each load checked by an inspector employed by Board of Health. Tonnage estimated by assuming weight of garbage at 40 pounds per cubic feet, although occasional tests show it to vary from 21 to 50 pounds.

Since May 1, 1929, the contractor has been required to make at least two collections per week from all residences throughout the year, and daily collections from those stores producing a considerable amount of garbage.

A Discussion of Hog-Feeding

By far the most common method of disposal in the metropolitan areas of large Massachusetts cities, and indeed in some of the cities themselves, is hog-feeding. This is considered by the average community a very satisfactory method so long as the hog farm is located in the *next* municipality. There is a strong tendency to incorporate in town by-laws a regulation against hog-raising except by special permit. In this way, hog-raising may be permitted in remote localities until the growth of the municipality forces the business to more distant points. The transportation problem will thus become more and more important until cost will bring about serious consideration of other types of disposal.

Some of the advantages of disposal by hog-feeding are:

1. The food values in the garbage are utilized, which is desirable for economic reasons.

2. Seasonal and annual fluctuations in the amount of garbage can be compensated for by increasing or decreasing the size of the herd, thereby requiring less permanent investment of a fixed amount of capital in the plant.

3. Refuse from hog feed may be buried to form a compost for fertilizing purposes, which has an economic value.

Some of the disadvantages of this method of disposal are:

1. Incomplete consumption, sometimes involving incineration of portions rejected by the hogs.

2. Difficulty of delivering the garbage in a sufficiently

fresh condition, perhaps forcing more frequent collections than are economical.

3. Neighborhood nuisances resulting from lack of sanitary methods used.

4. Introduction of hog cholera (in herds that are not immunized) through the feed, and resultant mortality of the herd. Foreign materials found in the usual garbage collected may injure the herd.

One hundred hogs will consume about one ton of garbage per day. Therefore about 4.75 cubic yards per day will raise 150 hogs to maturity.

The local value of garbage for hog-feed during the last few years, while variable with the price for hogs and other factors, may be roughly estimated from our experience in Belmont to be from $0.42 to $1.27 per cubic yard, and $0.78 to $2.34 per net ton.

It is evident that the service rendered in Belmont has greatly improved at decreased costs by returning to the contract basis of collection. Comparisons with costs in other municipalities do not indicate that Belmont is paying too much for the service rendered, but rather that the costs are fair, alike to the town and to the contractor. This increase in efficiency of collection is attributed largely to the form of contract.

Our experience indicates that there is no precise method of determining the amount of garbage collected, but volumetric measurement of a box or body of known dimensions when filled at level is the best. If it is heaped, even to fixed marks, the amount of compacting, and hence the true volume as well as the weight, varies considerably. The weight is also affected by the seasonal variations in the character of the garbage. The amount of garbage which can be loaded on a long, wide body of relatively shallow depth is quite different from that which can be loaded in a vehicle of exactly the same cubic contents but short and narrow with correspondingly greater depth.

Mid-Hudson Bridge Billboard Case Reversed

New York Court of Appeals Upholds Erection of Screen to Blanket Sign Near Bridge Approach

BY its decision on July 19 in *Perlmutter v. Greene*, the New York Court of Appeals administers one more cut to the outdoor advertising men's claim that the right to shout at people upon the public highway with a billboard is one of the constitutional attributes of the ownership of private property. Incidentally the Court declares its concurrence in the popular judgment by referring to a billboard as a "quasi-nuisance."

In 1930, Perlmutter, a furniture dealer of Poughkeepsie, N. Y., leased private land near the Poughkeepsie end of the new Mid-Hudson Bridge and started to erect a large billboard to advertise his business. Thereupon Colonel Frederick Stuart Greene, Superintendent of Public Works of the state, started to erect a lattice or screen on state land in front of the billboard in order to cut off a view of the board from motorists crossing the bridge, and thus make the board valueless.

Justice Bleakley of the Supreme Court granted an injunction against the erection of the screen, holding that the state had no "right to build screens along its highways, thus shutting out the view of adjacent owners or the view of travelers upon the highway of adjacent property, unless the screens are erected in furtherance of a highway purpose." He refused to find that the screen had a highway purpose, holding that the claim of the state that the billboard would be a distraction at a dangerous traffic spot was an afterthought, and that the real purpose was esthetic. He argued that if the state might erect a screen in this instance, "it might be done in every instance where the Superintendent reached the conclusion that a particular type or form of building attracted the attention of motorists." (140 N. Y. Misc. Reports, 42.)

The Appellate Division (234 App. Div. 896) in a brief memorandum, by a vote of three to two, sustained the Court below, saying in effect that while state officials might erect directional and traffic signs even though they obscured advertising signs, they might not erect a screen merely to blanket a lawful sign. "The purpose of the defendants, if carried out, is to prevent a lawful use of private property."

Just as Justice Bleakley below had thrown in a dictum to the effect that it would take a constitutional amendment to deal with the billboard evil, the Appellate Division majority threw in a dictum that even if the offending sign were a nuisance or were otherwise illegal, "that situation would have to be reached by other means" than the one used here by the state.

The opinion of the Court of Appeals, now rendered by Chief Judge Pound and concurred in by all the Court, seems to sweep away completely the reasons thus adduced to paralyze the hand of the State Superintendent. In dismissing the furniture man's case and in sustaining the right of the Superintendent of Public Works to erect the screen, Judge Pound says:

"He may act reasonably in his discretion for the benefit of public travel in screening a billboard at a dangerous curve when by its enormity such a structure may divert the attention of the motorist from the road. He then interferes with no property right of the adjacent owner and he should not be interfered with by the courts. If, incidentally, the approach of the road is improved by shutting off the view of the billboard, so much the better. We deal with the act and not the motive. An act, lawful in itself and not done with malice, will not be restrained, nor will the courts assume the management and control of state highways. * * * If the Superintendent desires to shield the travelers from obnoxious sights of public nuisances or quasi-nuisances by the erection of screens more pleasing to the eye, he still acts within his jurisdiction. He aims to make the highway free from sights which would offend the public. No adjacent owner has the vested right to be seen from the street in his backyard privacy. Again, if the purpose is to shut out from view scenes which might distract the attention of the driver of a car, the Superintendent may aim to make the highway safer for those who use it by erecting screens to keep the eye of the driver on the road as he erects barriers to keep the car on the road on dangerous curves."

Of the esthetic side of the question Judge Pound wrote:

"Beauty may not be a queen, but she is not an outcast beyond the pale of protection or respect. She may at least shelter herself under the wing of safety, morality or decency. It is, however, needless for the decision of the case to limit her sphere of influence."

The right of the state official thus established recalls the delightful picture published some months ago in the Roadside Bulletin issued by the American Nature Association for the National Council for Protection of Roadside Beauty, where a private owner, incensed at the erection of a huge advertisement by a neighbor in such a manner as to be read across the private owner's land, advertised his sentiments and blanketed the board with a canvas sign reading, "I favor products not advertised on the landscape." As a result of the New York decision, the effort of highway superintendents to take the profit out of offending rural billboards by the planting of trees in front of them, is likely to be stimulated.

ALBERT S. BARD.

THE PUBLIC BUILDINGS OF GLEN RIDGE—FIRE AND POLICE STATIONS, MUNICIPAL BUILDING, LIBRARY, AND HIGH SCHOOL

Glen Ridge, N. J.—A Suburban Political Utopia

No Ballot-Box Contests in Local Affairs— An Active Home Owners' Association and Successful Unemployment Relief Activities

By A. ROWDEN KING

A SCANT fifteen miles west of New York's City Hall stands the newly built Borough Hall of Glen Ridge, N. J. The home-citizens of the borough are almost entirely business-citizens of the big city, yet around the Glen Ridge Borough Hall* there is such a startling absence of wire-pulling and discord that the 7,365 residents have reason to congratulate themselves that their homes, if not their offices, are in the more Utopian of the two municipalities.

This fine building contains no door marked "Mayor's Office," under the typical Glen Ridgian idea that no mayor of the borough need have any secrets, so far as his public office is concerned, and that therefore a private office for the mayor would be quite superfluous.

Despite its proximity to the city, Glen Ridge boasts of not having a single apartment house. It has a strictly segregated business section—and a very small one at that. Time and time again, its citizens have combined financially to buy up property and thus keep out possible undesirable elements. And the public school system of Glen Ridge is acknowledged by the state to be one of the finest in New Jersey.

The mayor and councilmen of Glen Ridge receive the same munificent municipal salary, namely, $0 per annum. That is probably Reason One for the absence of politics.

Reason Two is the unique manner of making nominations for office. Every organization in town—the Women's Club, the Men's Forum, the Home and School Association, and the rest—has representatives on the Civic Conference Committee. Selection for office by the Committee is tantamount to election, since its candidates' names appear in all columns on the Election Day ballot. Glen Ridge knows nor Democrat nor Republican at the polls—where local affairs are concerned.

And Reason Three—perhaps the most important of all—is the fact that the borough is still small enough and enthusiastic enough for its citizens to take genuine pride in its civic affairs—the sort of pride which used to be characteristic of the average New England town.

Intelligent Publicity by Home Owners

One evidence of this is the Glen Ridge Home Owners' Association, an organization open to all property owners and citizens, which successfully leads local enthusiasm along important avenues, for the benefit of the whole borough. This organization, first of all, goes far toward stabilizing Glen Ridge real estate values by fostering and maintaining an active and healthy interest in Glen Ridge as a good place in which to live.

It "publicizes" the borough in the press, seeing to it that news which reflects the attractions of the place gets into print. It regularly sends news releases to metropolitan papers that do not directly cover the locality; it cooperates with the reporters of those papers that do.

Recently, it conducted a prize contest in which more than 700 Glen Ridge school children, with the open cooperation and help of their parents (this feature to awaken the enthusiasm of the latter) submitted compositions on the advantages of living in Glen Ridge. The Association is now preparing a handsome illustrated book on this subject, which will be placed in the hands of those known to be considering the borough for their homes. The organization is most active in tax-reduction efforts.

On a recent balmy evening in June, the Association

* See the front cover of this issue for views of the Municipal Building and the concrete bridge over the Glen.

NOT DEEP IN THE ADIRONDACKS, BUT WITHIN A STONE'S THROW OF THE LACKAWANNA STATION, IN GLEN PARK, GLEN RIDGE

A beauty-spot recently improved by the unemployed

played host at the largest gathering of people ever held in the borough, in order to dedicate the new Glen Park, which has been created as the result of the efforts of so-called white-collar workers from the ranks of the local unemployed.

Expert Unemployment Relief

This spring, under the able direction of Ernest Bridge, who served entirely without remuneration, unemployed tackled the job of installing an underground fire-alarm cable, with an appropriation based on the lowest estimate submitted by contractors, namely, $11,400. When they finished, they had installed a cable of 50 per cent extra capacity, enough to take care of future police and other needs, at a cost under $6,000. The rental saved on the telephone company's fire-alarm pull-boxes, formerly used, will now more than pay the interest on this charge. The $5,400 balance was diverted to other channels of need. The fire-alarm cable was only one of twenty-five public improvements put through in Glen Ridge this spring.

A most interesting chapter of Glen Ridge's unemployment relief has been in connection with work done for private householders.† Every type of activity, from excavating to the finest cabinet work, is performed. Building plans have been furnished; expert engineering advice has been provided. The total billing under this head from March 15 to July 1, 1932, exceeded $4,500.

† See also "Getting Down to Brass Tacks in Securing Jobs for the Unemployed," by Frank E. Barrows, in THE AMERICAN CITY, March, 1931, page 142.

Liability Insurance for Unemployed Workers

To facilitate matters, the Glen Ridge Committee on Unemployment was temporarily capitalized at $600, with Mr. Bridge as Director. Using this money, the men working under the Committee were fully insured against accidents. Circulars were sent to every home, listing the hundred or more services which the Committee was in a position to supply. And so efficiently has this activity been supervised that, at the suspension of work for the summer, recently, the entire capital was returned to the donors and a small balance was contributed to relief.

RESIDENTIAL SUPER-BLOCKS

THE benefits of replatting for larger residential blocks was pointed out at the recent annual convention of the National Association of Real Estate Boards, in Cincinnati, by Leonard P. Reaume, of Detroit, Mich., former President of the Association. He said in part:

"I have in mind making residential blocks two blocks wide and two blocks long, thus eliminating one street each way. This would make it possible to provide a beautiful playground for the garden side of the residences built on these properties. . . .

"The economy resulting from cutting off one-half of the street's improvements in a subdivision, plus the added price that could be secured for the residential lots offered in such blocks, would, in my judgment, produce the same net result that is now obtained by offering much smaller lots at the prevailing low prices."

Repairing Utility Cuts and Failures

By F. D. WOODRUFF

Assistant Superintendent of Maintenance,
New Jersey State Highway Department

THE military, industrial, commercial, educational and recreational value of the modern highway is, without doubt, almost beyond our calculations. These large investments in highway construction must be properly protected. This protection is secured only through intensive and direct maintenance, including not only routine care, but also control over the restoration of utility openings and repairs to unforeseen failures in existing high-type pavements. Principal among the pavements to be maintained are those composed of portland cement concrete.

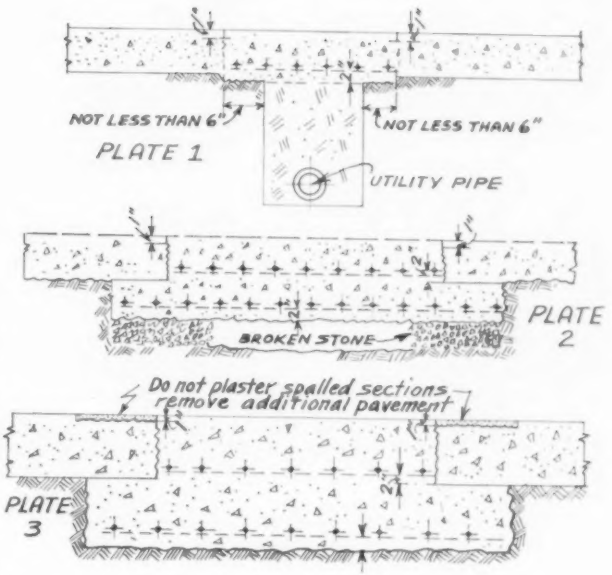
The Repair Problem

Repairs of portland cement concrete pavements on our modern through highway require a working control, not only of the methods to be employed, but also of the various aggregates, water content, and admixtures, if used, as well. Because of the many unusual factors involved, no specific laboratory supervision can be expected. Traffic conditions, time element, unskilled workmen, and other unavoidable conditions make it essential that a few simple rules be fixed in order that the very earliest high strength be obtained in the repair of these pavements. It is the rule that newly constructed concrete pavements must be cured for a considerable period before such pavements are subjected to heavy traffic. It is quite evident that it would be extremely disadvantageous to close any modern heavy traffic highway for a comparatively long period for the purpose of curing the restoration of a utility opening or repairs to miscellaneous failures.

The necessity of maintaining expensive and in many cases dangerous detours, and the disturbance to through traffic, may be almost completely eliminated by the development of high early strength methods. Higher strengths at 28 days mean corresponding higher strengths at the shorter time period. The curing time, when proper control is exerted, can be reduced to 18 or 24 hours, and even under strikingly adverse conditions to not in excess of 72 hours, atmospheric and temperature elements being given due consideration. Where patches are to be opened to traffic in 18 hours, conditions must be almost ideal, workmanship must be of the best, and accelerating admixtures must be employed generally. Surprising results may be obtained by adhering to the following general fundamentals.

Cement

The use of special cements other than true portland cements is not recommended. Special cements undoubtedly have merit where conditions warrant the expense and technical control, but special cements requiring unusual curing methods and treatment are not readily adaptable to average working conditions. Finely ground and specially burned portland cements requiring no treatment other than that given ordinary cement may be used, but in such cases no admixtures should be employed for additional acceleration. These cements are not always obtainable upon short notice, and it follows that the standard commercial brands are the portland cements which will be available for emergency repairs required for utility openings and general surface failures.



SPECIAL FEATURES OF ADEQUATE REPAIRS IN CONCRETE PAVEMENTS

Water

The varying acid or alkaline conditions characterizing the average available water, factors which affect the ultimate strength of the resulting concrete, will not be determinable for usual cases in the field. Care should be exercised in order that water showing strikingly undesirable characteristics may not be used. All other conditions being as nearly perfect as possible, the use of inferior water will as a rule produce poor results. Under no circumstances should this fact be ignored.

Sand

Sand, the fine aggregate, should be well graded in size, washed clean and completely free from all foreign material. Excessively fine material therein will usually require the use of additional water to produce a workable mix and in all probability will result in an inferior quality concrete. "Concrete sands," as found in New Jersey, generally have the essential characteristics, although some adjustment of the sand-cement ratio may be required in actual work, in order to obtain minimum "slump," that is, proper consistency. The control of this adjustment may be very casual, dependent upon the ability of the workmen to recognize a sufficient "dry" mix.

Stone or Gravel

Stone or gravel, the coarse aggregate, is usually produced in satisfactory sizes varying from ½-inch to the so-called concrete sizes. As in sand, no loam, vegetable matter or decomposed fragments should be present. The size of the coarse aggregate to be employed will depend upon the character and extent of the repair section being treated. Small-size coarse aggregates will develop better workmanship in small patches, while the standard larger graded aggregates are suitable for larger areas.

Proportions

Assuming that the determination of the void content of the coarse aggregate may not be made in emergency repairs, it will be found that an arbitrary mixture should be decided upon, for average conditions. For general work this proportion should range between 1 part cement, 1½ parts sand and 2 parts coarse aggregate, and 1 part cement, 1¾ parts fine aggregate and 3½ parts concrete gravel or stone, the former mix being used for patches averaging 2 square yards or less, wherein a ¾-inch coarse aggregate is preferable, and the latter for patches exceeding 3 square yards, in which the larger aggregate should be used. It is obvious that the smaller the repair section, the greater is the effect of impact load so far as bond may be considered. Whatever mixture may be determined upon, it is essential to slightly increase the cement ratio in the composition of the repair section. This increase may be fixed at 10 per cent, although during summer temperatures where admixtures are used, flash set should be closely guarded against. Where the original composition of the pavement being repaired is known, the same mixture may be used in large repair sections, although where some of our older pavements are encountered, no absolute rule can be fixed.

Preparation of the Subgrade

Not less than 6 inches of the concrete pavement should be removed beyond the edge of a utility trench repair. The subgrade so exposed, if of the proper stability, should not, in any manner, be adjusted. No foreign materials should be added to the subgrade, except where it becomes necessary to remove unstable material for a depth in excess of 6 inches. Where doubt exists as to the quality of the underlying foundation, the normal surface of the subgrade adjacent to the trench should be reduced for a sufficient depth to secure a substantial support which otherwise might be disturbed by the removal of the surface pavement to be repaired.

The backfill placed in the excavated trench of course must be thoroughly compacted, either by flooding or by mechanical tamping. Wherever possible, this flooding or tamping treatment of the trench backfill should be carried out in layers not to exceed 4 inches.

Surface failures as a rule result from the use of inferior materials, poor workmanship, improper subgrade compaction or bad drainage. The repair section should be of such quality as to correct the inferior workmanship and material factors, and a simple inspection should determine the necessity of auxiliary lateral drains to overcome any objectionable water levels. Where failures have occurred because of insufficiently compressed subgrade, it is essential to remove all material underlying the pavement which may give any indication of instability. Where the removal of the subgrade for a depth exceeding 6 inches becomes necessary, a thoroughly compacted subbase of broken stone or other suitable material should be substituted. To overcome the possibility of such instability extending beyond the limits of the repair section, the subgrade under and adjacent to the section to be patched should be removed as far as possible. While this treatment may not be as effective as the removal of additional surface area, it has been found that radiating progressive failures have been almost completely overcome by this procedure.

Preparation of Repair Edges Most Important

No edges, uniformly plumbed and tooled for the total depth of the pavement, should be permitted where either utility opening or surface failure repairs are to be made. The upper section of the adjacent concrete, however, should be plumbed for a depth not to exceed one inch to secure a firm shoulder. An edge smoothly plumbed for the total depth of the repair section is effective only where expansion and contraction features are to be considered, as in the case of individual slab construction. In some cases old surfaces have been found where oil film has penetrated to a considerable depth. No permanent bond can be expected where this condition prevails, although a rough abutting edge undoubtedly offsets this factor to some extent so far as bond is involved. Where a permanent bond is required, the use of a perfectly plumbed edge only invites early failure of the union between the old and new pavement and the consequent "punching out" of the restoration. A rough, uneven adjacent edge, properly treated, adds materially to the strength of the repair section and insures more effective bonding. Spalled or scaled surface areas of old concrete immediately abutting upon the area to be restored should not be plastered with portions of the mixture placed in the restoration. Such shallow repairs quickly chip out and leave a non-uniform surface and subject the restored area to undesirable impact loads. To obviate this condition, it may be necessary to remove sufficient additional old concrete to provide an even surface at the intersection of the old and new concrete.

Reinforcement of Patches Essential for Strength

Reinforcing steel, preferably ⅜-inch diameter deformed, should be placed in the restored section 2 inches above the bottom of the slab. The amount of such reinforcement to be used will depend upon the dimensions of the opening being repaired and upon the condition of the subgrade. In general, the spacing of this reinforcement should conform to the spacing found in the old pavement both transversely and longitudinally. Where reinforced pavements are encountered, either in the repair of utility trenches or in failures, the existing reinforcement in the area of the repair should not be removed, but should be bent out of range of repair operations until the section is to be replaced, at which time the steel should be returned as nearly as possible to its original position and tied in with new reinforcement. Where unreinforced pavements are encountered, a mat of bars not more than 12 inches center to center should be employed. Such reinforcement is of vital importance in restorations over service trenches. In case of extra-depth patches, two lines of reinforcement may be used.

Method of Placing Concrete Mixture

The edges of the existing pavement, which have been faced vertically for a depth not to exceed one inch measured from the surface, should be thoroughly washed, wire brushed, wetted down and painted with a 1:1 mortar coating immediately previous to the placing of the concrete mixture. This treatment is quite essential at all times, but obviously more so with high summer temperatures, during which periods the edges must be completely cooled and saturated previous to the 1:1 mortar coating, to be followed immediately by the installation of the concrete mixture.

The water content of any plain concrete mixture should not exceed 4 gallons per bag of cement. This water factor is further restricted by the moisture content of both fine and coarse aggregates. During certain periods of the working day aggregate, whether fine or coarse, being used from the bottom of a stock pile, may contain much more water than may be found in the top of the same pile. This condition, which is beyond any systematic control, must be carefully watched and the water added at the mixer drum adjusted accordingly. The aggregates, without admixture, should be mixed from not less than two and one-half minutes to five minutes in a machine mixer. No hand mixing methods should be employed. The resultant mixture should flow from a square-pointed shovel with difficulty and should show no appreciable slump when dumped upon the subgrade. Any mixture showing more than a 1-inch slump in 12 inches should not be used in high early strength repair work. The 4-gallon water-cement ratio mixture will, as a rule, produce a consistency which is called "unworkable." This unworkable mixture should be placed in the repair area in 2-inch layers, each layer being thoroughly compacted by either manual or mechanical manipulation. The repair in layers should be complete before initial set takes place. The final "dry" layer of concrete placed must be tamped sufficiently to bring out a workable surface; the surface roughly planed and kept slightly above the finished grade. The final tamping and finishing of the surface should be done as late as possible in order that, practically speaking, the shrinkage of the concrete may be worked out prior to the time of setting up. The proper time for performing this final operation will vary under different conditions and with different materials, but is best recognized by the surface drying-up appearance of the concrete. At this point the surface should be tamped thoroughly, planed to grade and finished to proper surface. Unless the surface of the patch is retamped and finished at this later period, all bond may be lost.

Using certain admixtures, concrete repair sections may be thrown open to traffic in twenty-four hours or less. Calcium chloride has been and may be used to advantage when necessary to secure high early strength rapidly under emergency conditions in low temperatures. Freezing weather and the construction of driveways to hospitals and fire houses and the repair of sections under super-traffic conditions make necessary the reduction of the freezing point and the rapidly increased acceleration of the final set. The fact that the use of calcium chloride only slightly reduces the freezing point must be considered. In low temperatures it is quite essential to heat not only the water, but the aggregates as well. No concrete should be placed upon a frozen subgrade. The results which may be obtained through the use of calcium chloride as an admixture in some cases do not give any great advantage over the proper use of plain portland cement, although the acceleration of the final set, which is undoubtedly more rapid, makes its use necessary in many instances.

A portland cement concrete mixture containing calcium chloride should contain no more water than that used in plain mixtures, but such mixtures must be manipulated much more quickly in relatively high temperatures than the plain cement combinations. Initial set takes place much earlier in high temperatures, and in consequence the depth of the layers to be tamped should be increased to not less than 4 inches. The same procedure of finishing as used for plain concrete mixtures should be followed just prior to the initial set, although at low temperatures there appears to be no difference between the action of a calcium chloride treated mixture and an untreated mixture in summer weather. The water and fine and coarse aggregates should be heated during freezing temperatures. This will insure more rapid hardening of the concrete. Where this procedure is followed, temperature conditions must be given utmost consideration, and the proportions of admixture, if used, must be carefully controlled. The mechanical mixing time should not exceed 2½ minutes in summer temperatures. Where the mixing time is in excess of this period, the mixture may set up in the drum of the mixer, or before the final tamping of the repair section has been completed.

Proportions

For rapid acceleration at temperatures above 70° F., a 1½ per cent calcium chloride solution may be used. At temperatures between 50° and 70° F., a 2 per cent solution; 32° to 50° F., 2½ per cent solution; and at temperatures from 24° to 32° F. a solution containing 3 per cent calcium chloride has been found satisfactory. No two portland cements will, however, react the same in combination with such an admixture, but for average working conditions these rules can be followed.

Preparation of Solution

The admixture, if calcium chloride, should not be added to the mixer drum in a dry condition. It must be added in solution in order that a thorough distribution of the salts may be assured. If added in the dry state, isolated portions containing the admixture may occur, quickly setting up and not only fouling the mixer drum, but if placed in the repair section causing areas of unequal initial set. To prevent any unequal proportions, the solution should be prepared accurately before the admixture is placed in the mixer drum. If a 2 per cent solution is required, a 50-gallon capacity container filled with 40 gallons of water should be employed. To this should be added 100 pounds of 75 per cent calcium chloride and the mixture agitated until the calcium chloride is completely dissolved. Add sufficient water to bring the total solution to 50 gallons, at which point each gallon of solution will contain 2 pounds of calcium chloride. A gallon of solution added for each bag of cement will then produce what is known as a 2 per cent admixture, or 2 pounds of calcium chloride for each bag of cement. This process may be adjusted to produce any concentration of admixture desired. The calcium chloride solution is not to be used in addition to the desired water ratio. If a

total of 4 gallons of water is required, only 3 gallons of pure water may be added at the mixer drum in addition to the 1 gallon of calcium chloride solution.

Curing

A concrete mixture containing calcium chloride, having been placed and finished to the proper surface, requires no careful curing, but during high temperatures the finished pavement should be protected by burlap saturated at frequent intervals. In plain mixtures the repair sections should be cured with wet hay or by the ponding method until the area is to be thrown open to traffic.

Colors

It has been found that the color of the adjacent pavement may be matched in the repair section by the use of carefully adjusted mixtures and by the incorporation of ferrous oxide in the concrete. Such a process is, however, not recommended for emergency repairs, owing to the fact that a highly skilled personnel, not as a rule found in general work, must be used to obtain exactness. A high early strength concrete is the ultimate desire, regardless of the fact that a "crazy quilt" surface appearance may be objectionable to the traveling public. Extremely difficult methods of control will be found necessary to accomplish a blending of colors, and it is felt that the early opening of concrete pavements is of far more importance to our vehicular traffic than the problematic results which might be obtained in an effort to please the eye. Where blending of colors is, however, considered necessary, pleasing results have been obtained by determining carefully the composition of the original pavement and incorporating in the patch cement, sand and coarse aggregate from exactly the same sources as applied in the old concrete. If the new patch is placed as outlined herein, there should be no shrinkage of the new concrete away from the old and consequently no reason to paint the perimeter of the repair section with bituminous material.

ACKNOWLEDGMENT.—From a paper presented before the Eighth Annual Convention of the Highway Officials of the North Atlantic States.

Our Existing Pavements Need Resurfacing! How Shall We Do It Economically?

A Study and Report by the Committee on Design and Construction of the City Officials' Division of the American Roadbuilders' Association

ONE of the largest items in the city budget is for the maintenance and renewal of pavements. Through ever-increasing payments for taxes these large items of cost affect vitally the welfare of the comunity. In many instances complete new heavy pavements are not only desirable but absolutely necessary in order to handle traffic at reasonable cost for maintenance. On the other hand, there are many situations where the existing pavements may be strengthened, sealed and salvaged by resurfacing, utilizing the old pavement as a base course. Such a procedure is generally quite satisfactory for residential streets with medium or light traffic, and often on main thoroughfares. When the existing main thoroughfare pavement is a well-established macadam, concrete, brick or stone surface which, while cracked and rough, is yet firm and well consolidated, an excellent new surface can be built using the old pavement as a base. The presence of abandoned streetcar tracks generally offers no obstacle to resurfacing, provided the track area is sufficiently solid to carry the traffic loads as a pavement base. Careful consideration must be given to the grade of the sidewalk and curb in resurfacing to be sure that the rainwater will properly drain to the sewer without flooding the sidewalk.

A careful study of each situation should be made to determine the relative economy of rebuilding a pavement and of resurfacing it. If resurfacing is feasible, the new pavement surface can be provided at a cost from one-third to one-half of that of an entirely new pavement. Resurfacing will also reduce very greatly the time required for the reconstruction of the roadway, with its attendant inconvenience to the public and the owners of the abutting property.

One of the most important processes in resurfacing is the complete sealing and closing of the cracks in the old surface, thereby keeping water out of the subgrade. Many pavements are destroyed because water has reached the subgrade, which would otherwise have served to carry the traffic for many years. The additional thickness of pavement provided through resurfacing serves to distribute traffic loads over larger areas of the subgrade and base.

The city engineer will earn his salary many times over when his studies result in a program of resurfacing to care for ever increasing traffic in place of destroying old pavements and building new.

Specific Examples

A survey of a number of the cities in the United States shows that resurfacing is used with success in many instances. A brief summary of typical reports is as follows:

ARIZONA

Tucson.—Old streets resurfaced with 2½-inch black base and 1½-inch top, 1923; under heavy traffic since, and failures of old street averted.

ARKANSAS

Pine Bluff.—Two thoroughfares resurfaced with 4-inch concrete. Pavement giving satisfactory service after six years.

CALIFORNIA

Berkeley.—Opposed to 4-inch base thickness. Where there is an asphalt top of lean mix, a new top may be placed over it for additional wear; where a rich mix is used it must be removed before resurfacing, otherwise shoving will result. Considerable success resurfacing old pavements with asphalt

emulsions and stone screenings, which makes a smooth-riding surface of good appearance.

ILLINOIS

Rockford.—Places bituminous surface treatments over gravel and stone streets until such time as traffic requires paving.

INDIANA

Indianapolis.—Resurfaced and widened existing macadam pavements with 5 inches of concrete. Excellent results.

Lafayette.—Concrete used as resurfacing material over approximately 10,000 yards of paving. Excellent condition.

KENTUCKY

Covington.—Older streets are of brick on either macadam or concrete base. When badly worn, have been resurfaced with asphalt if base is in good condition.

MICHIGAN

Battle Creek.—Resurfaced three blocks in 1926 with concrete; thickness 2½ to 5 inches. In 1927, 40,000 square yards of similar construction was used. Planning additional work of this type.

Flint.—Many streets with asphalt surface on 4-inch base, and under heavy traffic they have settled considerably. However, this settlement brought about complete stabilization in most cases, so that resurfacing with asphalt has been entirely successful. Also planning resurfacing of old brick pavements.

MINNESOTA

Duluth.—Resurfaced streets in wholesale district area with concrete, in 1926. Results satisfactory.

Virginia.—Numerous streets resurfaced with concrete 3 to 6 inches in thickness. Abandoned car-track areas included.

NEW JERSEY

Trenton.—For heavy traffic advises pavement replacement in order to provide better drainage.

NEW YORK

Elmira.—A large number of old streets built thirty years ago on thin bases which have become worn and uneven. When deterioration is of such nature as to require excessive maintenance, new pavements have been laid with 7-inch concrete base and either sheet asphalt or asphaltic concrete surface. Old pavements are cored, and where the old base is holding together, regardless of thickness or unevenness, the old surfacing is peeled off, the base evened with binder until a true, even contour is established, and then a new surfacing of asphalt is laid. In 1930, some 40,000 square yards were thus reconstructed. When coring shows a shattered and badly broken base, a new pavement is placed. Old brick and block are being resurfaced, and it is felt that some of the very best pavements are obtained when old brick and Medina block are utilized as bases for asphalt surfacing.

New York City, Richmond Borough.—Resurfacing of concrete placed on streets carrying heavy truck traffic in 1930. Results to date satisfactory.

Oswego.—Resurfacing with concrete since 1919. Yearly program of work of this type.

OHIO

Lorain.—Resurfacing with asphalt block, brick or concrete where grade permits, otherwise new pavement built.

Columbus.—Resurfacing old pavements with asphalt where grades permit. Large yardage of old brick resurfaced with sheet asphalt; very satisfactory.

OKLAHOMA

Muskogee.—Some streets in such bad condition that only a new pavement will serve, while others have become well stabilized and can be salvaged by resurfacing with asphalt. Many brick streets in excellent condition, but where worn rough, can be salvaged as base courses under asphalt.

SOUTH CAROLINA

Charleston.—New base courses are 5 inches thick but many pavements built in 1913-1916 are only 4 inches thick. So far no trouble experienced with 4-inch base, but it is believed that when new surfacing is necessary, it will be economy to place a new pavement, owing to difficulty in adjusting grades to sidewalks, etc.

TEXAS

Forth Worth.—Very few 4-inch base pavements, but it is believed that when traffic becomes excessive it is more economical to build a new heavy pavement.

WASHINGTON

Spokane.—A considerable yardage of light pavements, and a rapidly developing city with increasing traffic. Wherever possible, the old base is salvaged and resurfacing is placed. Surface heaters are used to burn off the old surfaces in order to get an economical base to proper grades, on which to place new surface. It is economical, wherever possible, to salvage old pavement, rather than let it pound to pieces and then require an entirely new one.

Conclusions

Each street should be carefully studied before the decision to resurface or rebuild a pavement is made.

Where the old pavement is well stabilized with proper drainage and not materially disturbed by recent service cuts, it is economical and highly desirable to resurface the old pavement instead of building a new pavement.

Resurfacing may effect a saving of from 50 per cent to 65 per cent of the cost of a new pavement.

Resurfacing greatly reduces the time required for reconstructing a pavement. Brick, stone block, and concrete surfaces usually make excellent bases for bituminous resurfacing.

Resurfacing can generally be used over abandoned street-car tracks without trouble if the track area is solid.

How City Planning Has Reduced Unemployment

IN the June, 1932, bulletin of the Employment Stabilization Research Institute of the University of Minnesota, there is a definite proof of the beneficial results of the program of advance planning and budgeting of municipal improvements in St. Paul, outlined by Mayor Gerhard Bundlie at the 1931 National Conference on City Planning. In this convention address and in a subsequent article in THE AMERICAN CITY (November, 1931, page 67), Mayor Bundlie stated that the carrying-out of a five-year program of city planning and municipal improvements at a cost of approximately $15,000,000—which had been approved by the electorate in November, 1928—had been an important factor in maintaining employment in St. Paul at a much higher percentage of normal than in other large cities.

The bulletin now issued by the University of Minnesota shows that for the years 1930 and 1931 the maximum decline in number of persons employed in all industries in Minneapolis as compared with 1929, was 26.3 per cent, while the corresponding figure for St. Paul was only 18.7 per cent.

"The difference in the movements in St. Paul and Minneapolis employment during this period may be attributed in part," says the bulletin, "to the contrasting movements in the building and construction industries in the two cities. A summary of the public and private building and construction projects during the past five years shows that the value for St. Paul in 1931 was 28.7 per cent greater than the 1927-1929 average for that city, and the 1930 total was 16.4 per cent above the same three-year average. The Minneapolis figures, on the other hand, show that the value of 1931 construction was 37.3 per cent below the average for 1927-1929, while the total for 1930 was 27.6 per cent below that for the boom years. Constructional activities have cumulative effects upon industries in the commmunity and affect the whole employment situation. . . .

"Approximately one-quarter of the total employee class in Minneapolis and Duluth were unemployed in the winter of 1931-1932. In St. Paul the figure was considerably smaller, one-sixth to one-fifth being unemployed."

Separate Sludge Digestion Works at Wichita, Kansas

By F. M. VEATCH

Black and Veatch, Consulting Engineers, Kansas City, Mo.

THE new sewage works at Wichita, which were placed in service July 1, 1932, are designed to give preliminary treatment to the sanitary sewage of the city under conditions of population and sewage flow predicated for 1940, at which time it is expected that a flow of 18 mgd from 160,000 persons will have to be treated. Contracts for the construction of these works were awarded in July, 1931, and the work was completed, with the exception of the sand fill, in May, 1932.

Since it is quite possible that more complete treatment will eventually be needed at this point, the works have been designed as a part of an activated sludge plant, and the additional structures for this extension, if made, will be located on land adjacent to the existing works.

The sanitary sewage of Wichita formerly entered the Arkansas River at three widely separated outfalls, but these have been intercepted and all the sanitary sewage is now discharged into the pump pit at the plant, from which point a lift of approximately nineteen feet is required to permit discharge into the river at maximum flood stage.

Screening and Grit Chamber

The treatment plant consists of mechanically cleaned bar screens, located on the suction side of the pumps, a grit chamber, an aeration tank, settling tanks, sludge digesters and sludge drying beds.

The screenings from the bar screen are deposited on a sloping belt which operates at a very slow rate of speed and serves to drain the screenings as well as to deliver them to the charging hopper of an incinerator fired with gas from the sludge digesters. The screens, sewage pumps, incinerator and air blowers are housed in a single building, which is divided by concrete partitions to isolate the screen chamber and pump sump from the rooms which contain machinery.

The grit chamber is in the form of duplicate channels, each of which will carry the average flow of sewage at a velocity of approximately one foot per second. Each channel is equipped with a motor-driven raking device which pushes the grit to a collection hopper, where it is washed with clean water under pressure and flushed into the drainage canal.

Aeration and Settling

Previous to settling, the sewage is aerated for a period of approximately twenty minutes for the purpose of removing grease and to sweep out odorous gases. Aeration is effected by compressed air applied through porous plates set in the "ridge and furrow" bottom of a concrete tank.

The settling tanks are in duplicate and are designed to give a detention period of two hours under average flow conditions. Sludge scrapers and scum skimmers of the Link Belt "straight line" type are provided. The settled sewage is discharged into the drainage canal through a cast iron outfall line in which a venturi meter has been installed. The scum from the settling tanks will be flushed into a skimming tank and after draining on a small sand filter will be incinerated.

Sludge Digesters

The sludge from the settling tanks will be pumped into the digesters, three of which, with total capacity of 320,000 cubic feet, have been provided. Each digester is heated by means of a separate gas-fired hot-water boiler, and three sludge pumps are so installed that sludge may be delivered from either of the raw-sludge hoppers into any one of the digesters. The various pipe lines are carried in a tunnel which leads from the basement of the laboratory building to valve chambers at the side of each digester, and are therefore easily accessible.

Each of the digesters is a circular dome roofed concrete tank, reinforced by the Hewitt method and equipped with mechanism of the Hardinge type for scum breaking and sludge removal.

Gas lines from the collecting domes in the roof of each digester discharge into a 25,000-cubic-foot gas holder, and the piping is so arranged that any sludge drawn from the digesters will immediately be replaced with gas.

Sludge Disposal

Thirty-six sludge beds, with a total area of 108,000 square feet, have been provided and are served by a system of industrial tracks so arranged that each bed is served by two tracks. It is proposed to utilize the dried sludge to fill in low ground at the river side of the plant, and the track system terminates in a trestle which may be extended as required. The sludge will be removed from the beds by hand and hauled to the dump by a gasoline-driven tractor and ten steel dump cars.

Water Supply

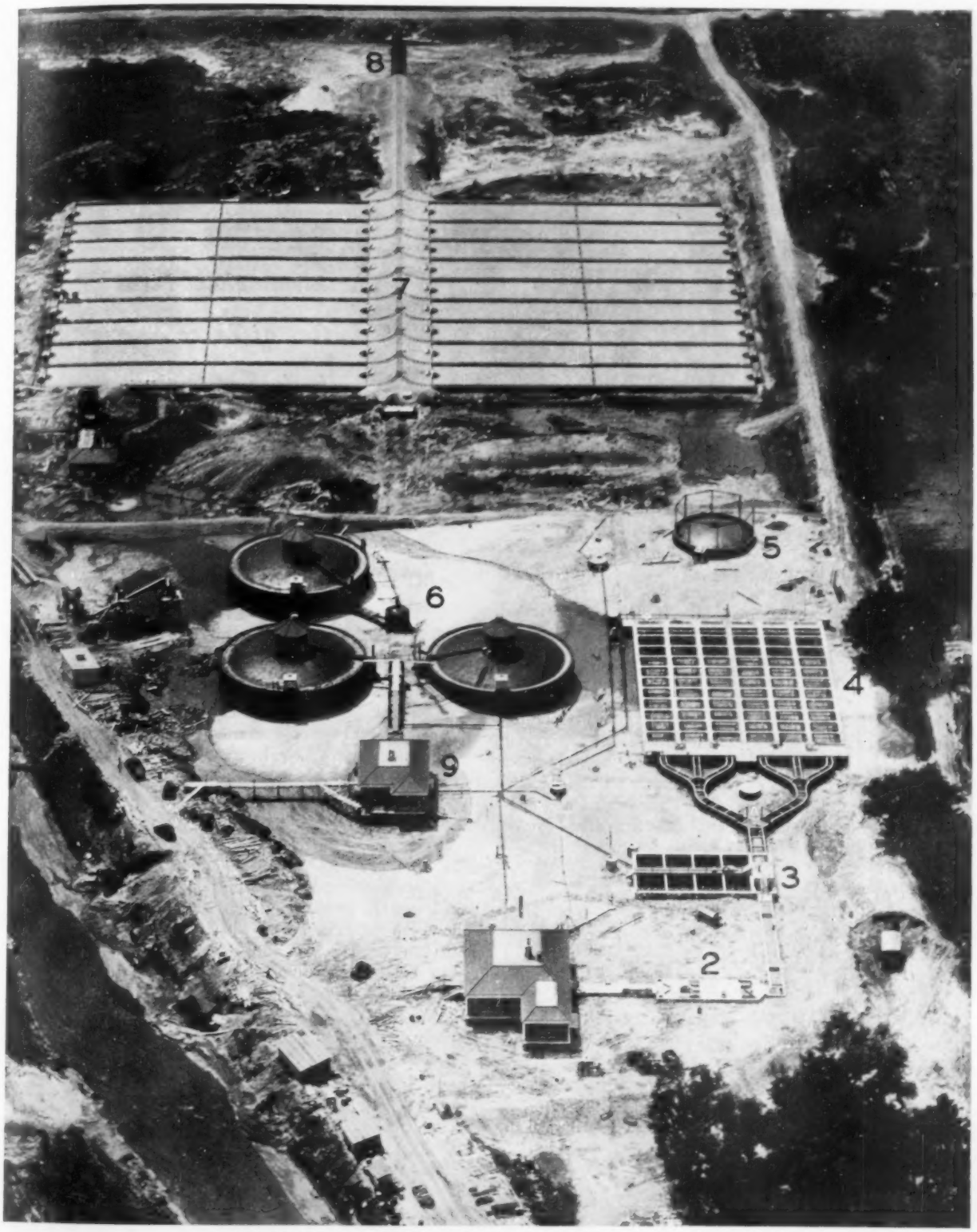
In order to provide water under pressure, a small water system consisting of a well, a pumping station and an elevated tank was constructed approximately one-quarter mile north of the plant, and was connected up with the water system at the plant. This includes outlets for flushing and cleaning at each of the units, hydrants for fire protection and irrigation, and the plumbing in the pumping station and laboratory building.

A very complete sewage laboratory will be maintained in the building which houses the boilers, sludge pumps and meters, and space is also provided for an office, locker room and showers.

The plant cost approximately $410,800 and on a design basis represents a per capita cost of $2.65; and a cost per million gallons of capacity of $22,700. Both of these costs are extremely low and reflect the price conditions

which prevailed in 1931 when the construction contracts were awarded.

The work was designed by Black & Veatch, consulting engineers, of Kansas City, Mo., and was constructed by the Gillioz Construction Co., of Monett, Mo., under the supervision of P. L. Brockway, City Engineer.



THE NEW SEWAGE TREATMENT WORKS AT WICHITA, AS OF MAY, 1932

The sand fill around the plant was being pumped in at the time this picture was taken. The component parts of the plant shown are: (1) screen and pump station; (2) grit chamber; (3) aeration tank; (4) settling tank; (5) gas holder; (6) sludge digestion tank; (7) sludge beds; (8) sludge dump; (9) laboratory

FRONT OF THE ADMINISTRATION BUILDING, THE CONCRETE APRON AND THE HANGAR AT THE BIRMINGHAM, ALA., AIRPORT

A Municipal Airport with an A-1-A Rating

The Birmingham Field One of Three With Highest Rating Awarded by the U. S. Department of Commerce

By **THEODORE REED KENDALL**
Engineering Editor, The American City

A MONSTER celebration was staged at the Birmingham Municipal Airport on June 3, 4 and 5, 1932, to mark the anniversary of the award of the A-1-A rating given the airport a year ago by the Bureau of Aeronautics of the U. S. Department of Commerce. The celebration included a night air attack, an anti-craft demonstration, night parachute jumping, races, military maneuvers, exhibition flying and parachute contests. Such a series of events focuses the eyes of the taxpayers on the airport which they have financed and helps to sell the value of the port to the community. Since there are only three airports with this highest rating in the entire United States, it is something to be proud of and worth celebrating.

The field has an area of 319 acres and is roughly square, with the northwest corner of the field rounded. It is located 4½ miles from the center of the city at an elevation 610 feet above sea level, and is within the city limits. It has a slight grade for drainage only, and contains no rolling ground that might be hazardous to the operation of planes in landing or taking off.

Drainage

The field proper is drained with brick and vitrified tile drains with from 18 inches to 3 feet of cover and varying in diameter from 15 to 42 inches. The vitrified brick drains have weep-holes all around the circumference of the section, each one the size of a brick. Each weep-hole is covered with galvanized wire mesh set into the brick joint on either side of the hole. The ditches are backfilled with slag from 1¼ to 1½ inches in size. The upper 4 inches of the slag was rolled and the top penetrated with a 40-50 penetration asphalt to hold it in place from the damaging action of tail skids and backwash of propellers.

The vitrified tile drain pipe has four dowels cast into the pipe at the end, and these fit part-way into the adjoining section, leaving a ¾-inch space at each joint. These trenches were similarly backfilled and treated. The drainage lines run east and west across the field and terminate in a concrete box culvert measuring 3 feet by 8 feet and 1,560 feet long. This culvert runs near the hangar. The outside areas are prevented from contributing drainage to the field by the use of open ditches on the north, east and west sides. These flow into Village Creek, which was lowered about 5 feet in a recent program of drainage in the city, thus preventing the possible flooding of the field in times of storm.

The drains are not underdrains in the usual sense of the word. Rather, they are sewers, each taking the surface water from a definite section of the field. They are spaced about 300 feet apart.

Taxiways, Apron and Runways

The taxiways and apron in front of the hangar and administration or terminal building are of 6-inch plain concrete poured in 30 x 15-foot sections with expansion joints between and with dowel-bars between sections.

The only runway at present completed runs north and south and is 100 feet wide and 3,700 feet long. It is built with a 6-inch slag macadam base with a 2-inch asphaltic concrete wearing surface. There is a drain along either side of the runway with open joint vitrified tile pipe.

Lighting

The field is adequately lighted for every purpose, the lights being controlled from the airport manager's office, the hangar and the observation tower on the administration building. The details of the lighting were described in an article in the August, 1931, issue of THE AMERICAN CITY, pages 144 and 145. As constructed, the field has 305 acres of landing field and 15 acres of building site, where the hangar, administration building and other additional structures may be located. There are 287 acres

of the field actually available for landing, based on the approved gliding angles.

The lighting equipment is served by two separate power lines: one a 2,300-volt line and the other an 11,000-volt line which is transformed at the airport to 2,300 volts and fed in two separate circuits to the distribution transformers in the administration building and the hangar.

The Hangar

A single brick and steel hangar 120 x 150 feet, with a clearance of 20 feet, is provided close to the administration building and has facilities for servicing and accommodating 25 to 35 planes. There is room for two more similar hangars on the south side of the existing hangar, and three more on the west of it. The Alabama National Guard, 160th Observation Squad, has leased 14 acres, and plans to move from its present location to the municipal airport and build as soon as the $132,000 appropriation can be used for this purpose.

Near the hangar the gas and oil of three different companies are available to regular and visiting planes under the control of the city. There are two service men on duty at the hangar each day, and a night man, in addition to commercial operators who have an approved shop.

Administration Building

The administration building would be a credit to any country club and yet is not too ornate for its purpose. The architect based its general lines on Washington's home at Mt. Vernon, but not because of the 1932 celebration which has caused many streets, bridges and other structures to be named for the Father of Our Country.

Within this building is a complete emergency hospital, and a 24-hour U. S. Weather Bureau observer connected by teletype with the weather bureau in the city and with the Department of Commerce broadcasting station. At the administration building it is possible to get weather data for any route or routes within a very few minutes. For example, a flyer wished the weather on alternate routes to New York City and within twenty minutes complete information was handed to him.

Both Western Union and Postal Telegraph have direct wires to the field. There are an attractive and well-appointed restaurant, a coffee shop and a soda fountain on the first floor of the building, and on the second floor is a 5-room hotel operated by the concession, as is the refectory service. The airport manager's office is on the first floor at the corner, with two large windows, so that he has an unobstructed view of the field and the hangar. A secretary's office adjacent to the manager's office is well

THE HANGAR, SHOWING THE RAISED AND ILLUMINATED IDENTIFYING NAME AND LETTER

appointed, so that the secretary may act as hostess to visiting lady flyers.

The lobby in which the soda fountain is located is well furnished with wicker lounging chairs, tables and plants, and leading from it are the offices of the air lines operating from or through the port. Rest rooms for both women and men are located on this floor, and in the basement are the kitchen and the various meter and switching rooms for the electrical equipment. The hot water heater for the buildings is also located here.

Keeping the Airport "Sold"

The Birmingham airport cost the city $1,080,000, and it is a fine investment that will pay great dividends to the city as the use of air transport increases. Already the port has the only flying school in the Southeast that holds a Department of Commerce certificate. It is on the southern transcontinental line between New York and Los Angeles operated by American Airways with tri-motor Fokkers.

The Airport Manager is forward-looking and believes that the job of a manager is not to be just a policeman, maker of rules and collector of tolls. He feels it his duty and privilege to promote the use of the airport, sell air-mindedness to the citizens and visitors, keep harmony both within the administration of the field and with the taxpayers, and continually show the wisdom of the investment in the port.

Every luncheon club in the city has had at least one meeting at the airport within the last year. For each visiting group some aviation program is devised and put

THE ATTRACTIVE ADMINISTRATION BUILDING MIGHT WELL BE A COUNTRY CLUB, FROM ITS EXTERIOR AND ITS FURNISHINGS

on for their special benefit. High school groups visit the port, the Chamber of Commerce, the Junior Chamber of Commerce and other civic organizations are all vitally interested in the airport and are backing it to the limit. The Junior Chamber of Commerce has a permanent aviation committee. The Airport Manager, a retired Navy commissioned flyer, puts in about one-half of his time, days, nights, Sundays and holidays, selling the airport to the taxpayers and to the industries of the city.

The Birmingham Municipal Airport was built by the city of Birmingham in 1931, from the designs of A. J. Hawkins, City Engineer, and E. W. Stanford, architect. The administration of the airport is in the hands of Steadham Acker, Airport Manager. We gratefully acknowledge the courtesies extended to us in visiting this airport for the purpose of securing the data for this article, which has been approved by the municipal authorities, and for the photographs which illustrate the text.

Flushing and Hand Pick-up Crews Keep Louisville Streets Clean

THE problem of keeping the streets of any city in an immaculate condition is a large one. The modern question of parking of automobiles has made the problem even greater to the street-cleaning department of every city both large and small. The Division of Street Cleaning of Louisville, Ky., has tackled the problem with flushers and hand pick-up crews successfully.

The sixteen square blocks in the heart of the city known as the Metropolitan Area are cleaned every night by flushing with five South Bend flushers, one double unit mounted on a White truck, and four single units mounted on Mack trucks. The night flushing is followed by a pick-up crew of eight men and two 3-ton Mack trucks. These trucks are used in the municipal coal yard during the day, for this activity is also under the direction of the Division of Street Cleaning, as is garbage collection and disposal.

The day crews consist of six eight-man gangs; five of them have three teams each, and one crew has four teams for hauling away the accumulated material. Each crew has a definite route planned ahead for each of the six full working days each week. If a crew is lagging on its schedule, one of the flushers is sent out to help it along by washing the accumulated material on the street into the gutters, where it is more readily picked up by the hand operators. Each crew averages 10 curb miles per day.

The Spring Clean-Up

The annual spring clean-up is a period of intensive activity throughout the city, for the Division of Street Cleaning combines all its forces, both refuse collection and street cleaning, toward the removal of all wastes which have accumulated throughout the city and constitute a fire or health hazard. The clean-up period is four weeks long. For a week before the intensive clean-up in any one district, the school children have the idea of cleaning-up drilled into them, and they are encouraged to organize parades in their immediate neighborhoods, when they march around carrying brooms and shovels and banners furnished by the local Safety Council.

For the first two weeks of the clean-up all the available crews of the Division of Street Cleaning are moved into the Eastern District of the city, and every street and alley is thoroughly cleaned. The people are instructed to place in the alley everything that should be disposed of from both houses and yards, and particularly those things that have accumulated in odd corners and which may be fire or health hazards. The pile of material that shows up in the alleys and on the curbs is a marvel; its removal makes the city a better place in which to live and the extra effort is well worth while. During the period of the spring clean-up the incinerators are worked on a 24-hour schedule to take care of the extra production of combustible material. For the second two weeks of the clean-up the crews are all moved to the Western District, where the activity of the first two weeks is repeated.

All ordinary street cleanings are disposed of on dumps and are not taken to the two incinerators. The material gathered during the clean-up in the spring, however, is taken to the incinerators. It used to be an easy matter to find low land in the city where the street cleanings could be disposed of with short hauls, but now the few main dumps of the city, which are also used for regular refuse dumping, are used. This entails longer hauls for the street sweepings, and hence greater costs for disposal.

Another function of the Division of Street Cleaning is the removal of such small snowfalls as come occasionally during the winter. Four trucks of the division are equipped with Baker pusher plows, which are attached to the front of the trucks on permanent frames and quickly handle the snowfalls. The maximum fall for a number of years has been two inches of snow at one time, and that has been easily cared for by the group of pusher plows.

The budget of the Division of Street Cleaning of Louisville for the fiscal year, which does not coincide with the calendar year, is made up by the Chief of the Division, and the money appropriated is a certain portion of the tax dollar, which is determined by the records of the different municipal divisions during the previous year. All unexpended balances of previous appropriations are added to the amount allowed for the departments, but it is usual for the percentage allotment to be cut slightly when there has been an unexpended balance.

The budget for the fiscal year 1930-31 was as follows:

Street cleaning	$123,393.90
Garbage collection and disposal	280,166.71
Disposal of dead animals	2,225.58
Equipment purchase	564.00
Total	$406,350.19

The Division of Street Cleaning is under the direction of H. W. Fleddermen, Chief, with R. N. Pontrich as assistant.

Design and Operation of Dual Interceptors and Sewage Treatment Plants

By GEORGE W. WHITE

Engineer, The Harwood Beebe Co., Civil Engineers, Spartanburg, S. C.

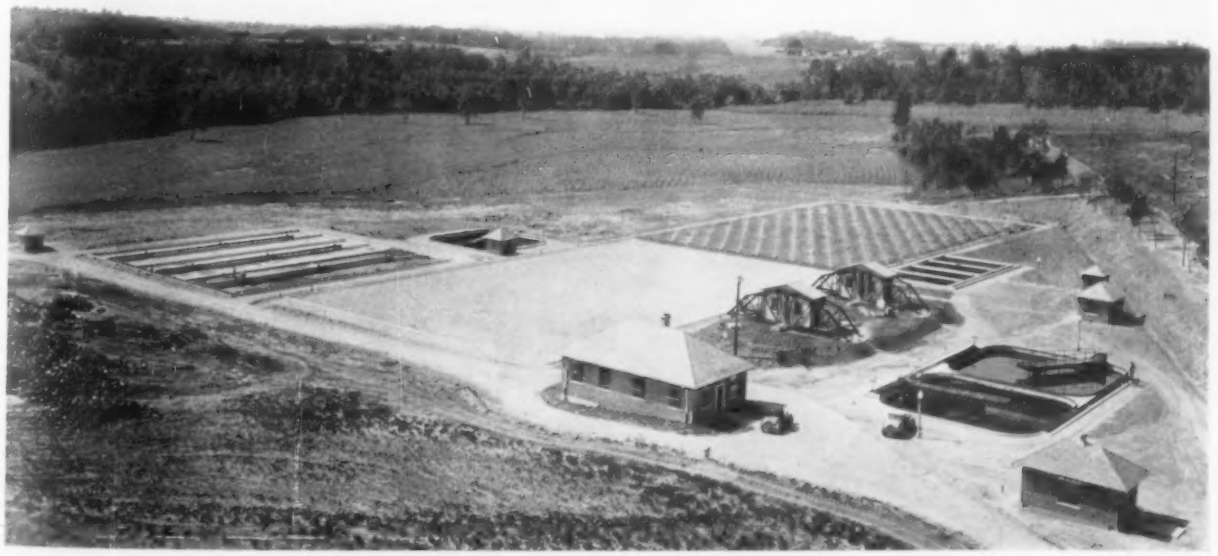
THE city of Spartanburg, S. C., has a population of approximately 29,000 within the corporate limits and an adjacent population of 10,000 in various industrial communities near the city. For years all sewage from the city and the neighboring communities has been discharged into two streams, between which the city is located, most of it without any treatment whatever. Fairforest Creek, the smaller stream, which flows through the western edge of the city, received twice as much sewage as reached Lawsons Fork, the larger stream on the east.

The pollution of Fairforest Creek was so great that the need of adequate treatment became quite urgent. Although Lawsons Fork was not so badly polluted, it was included in the disposal program that was adopted. A sanitary district known as the Spartanburg Metropolitan District, formed by legislative enactment, includes the city of Spartanburg, the adjacent communities and much territory that is naturally tributary to the proposed system, a total area of 33 square miles. The district was authorized to construct and operate intercepting sewers and disposal plants, but not collection systems. The act creating the district also provides for the formation of sub-districts which may construct water works and sewage collection systems.

Flat Grades for Interceptors

From the first it was evident that two intercepting sewers would be necessary, one paralleling each creek. The Fairforest Creek sewer begins as a 36-inch pipe at the plant site and reduces to a 15-inch pipe at the upper end. The gradient of the creek is such that a very flat grade was required at the lower end of the interceptor in order to avoid pumping sewage at the plant. The 36-inch pipe, 2 miles in length, was laid on a grade of 0.08 per cent. and the next section, 27-inch pipe, on a 0.24 per cent grade. The same condition existed on Lawsons Fork, so that the lower end, which is 27-inch pipe, was also laid on a grade of 0.08 per cent for 3.3 miles. The steepest grade that could be used on this interceptor was at the upper end, where the 12-inch pipe was laid on a 0.25 per cent grade. The total length of the interceptors is 8.2 miles and 11.2 miles, respectively.

On both lines numerous trestles were required to cross ravines and wide bottoms of tributary streams flowing into the creeks. The trestles were constructed of concrete bents, somewhat "A" shaped, with cast iron pipe spanning from bent to bent. Deep cuts were also required in cutting through ridges or sharp points of hills. Where the depth exceeded the safe limit for vitrified clay pipe, lightweight cast iron pipe in 5-foot lengths was used. In many places where it was necessary to protect the pipe from action of the creek, it was encased in concrete, or a baffle-



THE FAIRFOREST CREEK SEWAGE TREATMENT PLANT AT SPARTANBURG, S. C.

This photograph shows, from left to right, the effluent chlorinator house, sludge drying beds, final sedimentation basin, trickling filters, operating house, sludge digestion tanks, primary sedimentation basins, the trickling filter dosing tanks, and the screen chamber in the right foreground

wall of concrete was built between the pipe and the creek.

It was found advisable to cross Lawsons Fork twice, and for these crossings inverted siphons were used. Each siphon consists of an 8-inch and a 10-inch line of cast iron pipe with concrete inlet and outlet structures, and suitable clean-out arrangements. The siphons form portions of a 15-inch section of the interceptor, and the head allowed was such that the two pipes will deliver the capacity of the 15-inch sewer. Only the 8-inch pipe will be used at present.

Separate Sludge Digestion Plants

After careful investigation and comparison of costs and operating conditions, it was decided to construct both disposal plants of the separate sludge digestion type. On Lawsons Fork, bar screening, sedimentation and sludge digestion were deemed sufficient treatment at present, but space and head were provided for secondary treatment in the future. On Fairforest Creek, however, the small amount of dilution rendered secondary treatment imperative. This consists of sprinkling filters and final sedimentation. Chlorination of the raw sewage and the effluent at both plants is provided for, and also chlorination of the influent to the filters at Fairforest Creek plant.

The screens consist of iron bars with one-inch clear opening, mechanically cleaned. Screen chamber and equipment are housed in brick buildings. An overflow weir is provided at the entrance to each screen chamber, designed to by-pass the entire flow around the chamber in case of stoppage of the screens. A sluice-gate is located at the entrance to the chamber to cut off the flow and force the sewage over the weir if it is desired to de-water the channel. By-pass connections are provided below each unit, so that the sewage may be by-passed at any point.

The Fairforest Creek plant was designed for an average flow of 3 m.g.d. and a population of 30,000, while the Lawsons Fork plant was designed for half that capacity. At both plants the primary sedimentation period was fixed at two hours, at rated capacity, and the capacity of sludge digestion tanks at two cubic feet per capita. All these units are in duplicate for the sake of flexibility and to allow for shutting down one unit without by-passing the entire plant.

The primary sedimentation basins are equipped with

THE 28-INCH CAST IRON INTERCEPTOR ON CONCRETE BENTS

This trestle is 815 feet long and is at an average height of 12 feet above ground

sludge collectors, or clarifiers, and skimming devices. Sewage enters the tanks through submerged openings behind baffle-boards and passes out through other submerged openings and over adjustable effluent weirs. Skimmings are collected and pumped into the digestors along with the sludge. The removal of settleable solids in these tanks has been excellent.

The sludge digestion tanks are circular and have concrete roofs. They are provided with stirring and scum-breaking mechanism. Sludge is pumped in at the top and drawn off at the bottom. Supernatent liquor overflows to the primary sedimentation basins. Gas-collecting equipment and hot water circulating systems are included in the digestion tanks, the gas being used to heat the tanks. Since the first few months of operation, more gas has been produced than can be used. The excess goes to waste through relief traps and vents. It is expected to heat the operating buildings with the gas after this winter.

The sprinkling filters of the Fairforest Creek plant are fed by two pairs of twin dosing tanks and 24-inch siphons. Each pair is designed to carry the entire plant capacity in case of emergency. The filters are 6 feet deep and have an area of 1.48 acres, giving a flow of 330,000 gpd per acre-foot at rated capacity. Tile underdrains are used that

THE LAWSONS FORK PLANT, SPARTANBURG

The flood protection dyke for the plant is seen in the middle distance, with the various units of the plant in the foreground

discharge through an open pipe gallery and a pipe system into the final sedimentation basin. This is a single basin having a retention period of 1½ hours. Sludge from this basin is pumped to the digestion tanks.

Sludge drying beds at both plants are divided into units 20 feet wide, and have a total area of ½-square foot per capita. They consist of 6 inches of sand over 6 inches of graded, crushed rock. The bottoms and sides are of concrete. A drain down the center of each unit discharges into the effluent sewer.

An operating building at each plant houses the sludge pump, heating equipment, venturi meter, office and toilets. At the Fairforest Creek plant a chemical laboratory is provided and quite fully equipped. Complete records of this plant are kept, and partial records of Lawsons Fork plant.

Contracts for all of the work were awarded on September 5, 1930, and the plants were put in operation in July, 1931. The cost of the two interceptors was $501,374, about equally divided between them. The cost of the Fairforest Creek plant was $317,336 and that of the Lawsons Fork plant was $84,628; exclusive of property in all cases.

Personnel

The contractor for the two disposal plants was The McClelland Co., Charlotte, N. C., and for the pipe lines, the Fiske Carter Construction Co., Spartanburg, S. C. The equipment for the Fairforest Creek plant was furnished by the Dorr Co., New York, and the Pacific Flush Tank Co., Chicago. The equipment for the Lawsons Fork plant was furnished by the Link-Belt Co., Philadelphia, and the Hardinge Co., York, Pa. The engineers for this project were the Harwood Beebe Co., Spartanburg, S. C., who retained Morris Knowles, Inc., Pittsburgh, as consultant.

Patching Pavements in Richmond, Ind.

By **J. V. SCHNEIDER**
Street Commissioner, Richmond, Ind.

THE PATCHING OUTFIT — TRUCK AND TRAILER-TYPE ASPHALT KETTLE

A LARGE percentage of the streets of Richmond are water-bound macadam or traffic-bound gravel. They are maintained with a grader or maintainer to reshape the surface, as may be needed, until such time as they can be surface-treated.

This class of street presents our greatest problem. The streets become rough owing to chuckholes and corrugations forming and from settlement of trenches made by the water, gas and telephone companies. We have an arrangement in Richmond under which the utility must make a deposit with the city, to cover the expense of repairs, before permission can be secured to cut into any improved street. The amount of the deposit is based upon the units of work to be done, at rates fixed by ordinance and determined by past experience. After the utility or private party has completed its work, the street repair work is done by the Street Department. The cost of this class of work, in the aggregate, amounts to a large sum and, while it is paid back to the city, it is credited to the General Fund and does not reduce the expense of the Street Department. This reflects upon the economy of the operations.

The Patching Squad

All pavement repair work in Richmond is done by a gang known as the "patching squad." The equipment for this gang consists of a flat-bottom, low-side motor truck with a Littleford tar kettle hooked on behind, as a trailer. For repairs to streets other than concrete, the aggregate ordinarily used is No. 4 or No. 6 stone, for the base of the patch, penetrated with tar or asphalt. The tamped penetrated base is surfaced with a coat of sand or pea-gravel. The aggregate is loaded in the truck in compartments, one for sand and the other for coarse stone. The kettle is equipped with a pressure kerosene burner, which heats the bituminous material to any desired temperature and gives entire satisfaction.

Utility Cuts

Holes to be patched are swept clean and, if deep, are given a coating of bituminous material. They are then filled with the patch material, either pre-mixed or penetrated in place. In the case of so-called utility or service ditches, they are refilled by the utility and allowed to settle thoroughly, refilling as may be necessary. After a sufficient time has elapsed, about two inches thickness of the top is removed by hand and a patch added as in the case of a chuckhole.

In the case of permanent pavements, as where a concrete base exists, the method of repair is somewhat different. After a trench has had time to settle, it is dug to the depth of the old pavement, and at the edges to a greater depth, and widened into the solid ground under the remaining old pavement so as to form a shoulder on the undisturbed foundation and thus prevent settlement. This hole is then filled with concrete of the desired thickness and allowed to set before the wearing surface of asphalt or brick is laid. If the pavement is of one-course concrete, the slab is made of one course for the full depth and opened to traffic after sufficient time has elapsed for setting.

A SMALL HOLE CLEANED OUT READY FOR THE PATCH

THE HOLE FILLED WITH STONE—AND ONE OF THE CREW MAKING THE SECOND APPLICATION OF ASPHALT

APPLYING THE LAST COAT OF CHIPS TO A LARGE PATCH

The service ditches in black top pavements, where no concrete base exists, are most troublesome. In such cases it sometimes requires several patches before a proper surface is finally re-established.

Corrugations and Frost Boils

Corrugations, especially where "Stop" and "Go" signs are installed, at street intersections, frequently form in asphalt pavements. It is our practice to remove these by adzing with a sharp pick or mattock during cold weather, when the bitumen is brittle. If this is carefuly done, no further treatment is necessary, for the surface will become smooth under traffic. If, however, a rough job of adzing is done, it will be necessary to add a thin layer of rock asphalt or similar resurfacing material.

Frost boils are also very troublesome and cause much grief to the Street Department. We usually take care of these in the spring of the year by digging away the old surface and putting in a large patch, as when repairing a chuckhole.

Repairs with Emulsified Asphalt

When necessary, secondary streets are resurfaced with a mat. Last year one such job was done by applying emulsified asphalt and chips without tearing up the old surface, which was solid but full of small chuckholes. The pitted surface was swept clean and an application of about 0.15-gallon per yard of 100 penetration 50 per cent emulsified asphalt was made. On this was spread from 10 to 24 pounds per yard of pea gravel, and another similar application of the asphalt was made. This was dragged with a triple suspension maintainer to shape the surface and fill the pit holes. Better success was attained with 150 penetration asphalt and about 60 per cent emulsion.

ACKNOWLEDGMENT.—From a discussion presented at the Eighteenth Annual Road School, at Purdue University.

Salaries and Operating Expenses Reduced in Most Large Cities

EIGHTEEN of the largest cities in the United States have been forced to cut down on their operating expenses, and only three of these cities have not yet reduced municipal salaries in one way or another, according to despatches to *The New York Times* published July 25. Of the three cities,—Boston, Baltimore and Denver— apparently only Denver does not contemplate any salary reductions or tax increases. Denver has been able to reduce taxes one and a quarter million dollars; tax collections have been only three-quarters of one per cent below normal, and $196,000 in delinquent taxes has been collected during the first six months of the year—250 per cent more than in the same period last year. Philadelphia, Baltimore and Louisville have also been aided by prompt payment of taxes. Louisville is able to refund on August 1 a conditional 10 per cent cut which all employees accepted for 30 weeks. Repayment has been made possible by municipal economies and unexpectedly heavy tax collections.

Pay cuts in the large cities reporting to the *Times* vary from 6 per cent in the case of firemen and policemen in Philadelphia, to 40 per cent for some politically appointed employees in Cleveland. Pittsburgh uses the one-month furlough plan. Many cities have been forced to dismiss employees and to introduce the stagger system to save further dismissals. Detroit, Los Angeles and Seattle have introduced the five-day week. In cities where statutory provisions prevent the municipal government from declaring cuts, as in the case of most New York City employees, firemen and policemen in Los Angeles, and policemen in St. Louis, voluntary reductions are being requested. New York has asked for the sacrifice of 8 1/3 per cent of all municipal salaries. In San Francisco by voluntary agreement municipal employees are contributing one month's salary toward unemployment relief.

Other cities reporting largely reduced payrolls include Chicago, New Orleans, Birmingham, Rochester, Atlanta and Kansas City, Mo.

A GENERAL VIEW OF THE EAST JEFFERSON WATER WORKS

New Water Works for a Louisiana Parish

By HENRY A. MENTZ
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A SPECIAL act of the Legislature of Louisiana, passed in 1926, provided a means of organizing districts within the parishes of the state for the construction of water works and water distribution systems. Through this enabling legislation, East Jefferson Water Works District No. 1 was developed to serve the entire portion of Jefferson Parish, situated on the east bank of the Mississippi River and comprising Metairie Ridge, Southport-River, Harahan-Highway and the town of Kenner, having a total population of 15,700.

In preparing data for the preliminary report, the engineers decided that all plans for construction should be based on the probable development of the territory for a period of fifteen years, during which an anticipated 100 per cent increase of population could be expected. Thus the ultimate plans called for a daily demand of 4,000,000 gallons, with a space capacity for a 25 per cent overload. Designs were prepared to allow for an extension of the treatment plant to a normal capacity of 6,000,000 gallons per day with an overload capacity of 7,500,000 gallons per day.

Source and Intake

The Mississippi River was selected as a source, and lime and iron treatment with rapid sand filtration was adopted for purification. The intake works are constructed in duplicate. Each unit consists of a low-stage service pump with 20-inch intake and 20-inch discharge lines and the necessary vacuum pumps. The intakes are equipped with coarse screens to keep out débris and a low-service pump to discharge raw water direct into grit chambers, each with a capacity of 2,500 gallons per minute, or 3,600,000 gallons per day. The pumps are of the horizontal motor-driven type and are installed in a concrete and brick structure known as the River Pumping Station.

A uniform flow of raw water to the treatment plant at a predetermined rate is maintained by a hydraulically operated gate valve located in the intake delivery line, and actuated by a float in the grit chambers. This valve prevents overflow and automatically stops the river pumps by means of a limit switch attached to the operating mechanism of the valve.

Grit Chambers

The three grit chambers, two of which are used simultaneously with one in reserve, give a two-hour retention period for the removal of the heavier solids. Each grit chamber has an area of 1,700 square feet and an effective depth of 10 feet with an allowance of 4 feet for settled solids. The water level in the grit chambers is maintained constant by means of weirs in the discharge flume and is high enough to permit a gravity flow through the entire treatment plant.

Treatment

Following the two-hour settling period in the grit chambers, the water flows through a pipe to the mixing chambers, where an orifice plate meter mixes lime and iron with the water. The chemical treatment is controlled automatically by means of a float operating the dry feed machine. The mixing period within the chambers is 30 minutes. These mixing chambers are of the helical flow type designed to produce a spiral flow at a rate of 2 feet per second. This is induced by paddles driven by a horizontal shaft located within the center of the chamber.

There are four coagulating basins, each with an area of 6,000 square feet and an effective depth of 10 feet with an additional 4 feet allowed for the storage of settled solids between cleanings. The basins have a capacity of 507,000 gallons, and with three in service give a 12-hour retention period; the fourth is held in reserve for cleaning when operating at the rated capacity of 3,000,000 gallons per day.

Filtration Plant

From the coagulating basins, the water flows by gravity to the rapid sand filters, of which there are four, of 1,000,000 gallons capacity each, each with an available sand area of 437 square feet. The filter bed is composed of 18 inches of graded gravel and 30 inches of graded sand and is equipped with underdrains of the most modern type.

Each filter is equipped with a venturi effluent rate-of-flow controller, and each filter has concrete wash-water troughs. The filters are washed by water pumped by a motor-driven centrifugal pump of 6,000 gallons per min-

THE FILTER GALLERY, SHOWING THE OPERATING TABLES AND WASH-WATER PRESSURE GAGE

ute capacity, operating against a head of 25 feet. The rate-of-wash is controlled from the operating table in the filter gallery. The filter effluent flows direct to the clear-water reservoir, which is a watertight, concrete, underground tank having a 72,000-gallon capacity.

Three pure-water pumps of 2,100 gallons per minute capacity pump from the clear-water well to the 3,000,000-gallon storage reservoir. These pumps are controlled by electric switches on the filter operating table and may be operated independently or in any combination as desired. The water is chlorinated at the intake of the clear-water pump.

Power and Pumping Plant

Power for the operation of the pumping plant is purchased from the Louisiana Power & Light Co. through a transformer station which receives 3-phase, 60-cycle alternating current at 13,200 volts and transforms it to 440 volts. This transformer station has a bank of three transformers, each with a rated capacity of 333 kva. Disconnect outdoor switches and lightning protection is provided. From this transformer station, lead-encased cables in underground ducts carry the power to the main switchboard in the pumping plant. This switchboard is of the dead front type where all circuits are metered, as well as the total consumption, so that a complete check-up may be made on the power consumption of the different pumping operations.

The two 1,500-gpm service pumps are provided with synchronous motors which tend to provide a better power factor for the entire plant. Two large, quick-starting, heavy-duty diesel oil engines drive two 3,000-gallon, 100-pound pressure fire pumps through oil-immersed speed increasers. Common shafts have been extended through these fire pumps, and 250-horsepower motors mounted on them which insure a dual and flexible power drive. Two 3,000-gallon per minute electric-driven fire pumping units have been provided in addition. Each of these motor-driven units has individual cabinet-enclosed electric starters, which are operated by means of push-button controls. A 120-horsepower special electric oil engine unit has also been provided which will drive a 90-kva generator. This unit furnishes lighting for all of the buildings, grounds and intake works and drives a small filter-plant motor and a raw-water motor, permitting the treatment for the purification plant to continue its operations at night should the source of power fail for any length of time.

The Distribution System

The distribution system was designed to cover the entire area and includes 3,016 feet of 20-inch main, 9,548 feet of 18-inch main, 10,680 feet of 14-inch main, 52,820 feet of 12-inch main, 46,280 feet of 8-inch main, and 160,892 feet of 6-inch main, together with approximately 300 Mathews fire hydrants and the necessary gate valves for the proper control of the system. The fire hydrants are of the make used throughout the city of New Orleans and have the same hose thread connection. This will enable the New Orleans Fire Department apparatus to assist in fighting large fires in the East Jefferson area.

Personnel

The entire design, supervision and management of construction of this project was handled by Henry A. Mentz & Co., consulting engineers, Hammond, La., who prepared the preliminary report, construction and operating costs, preliminary studies, contract designs and specifications, as well as having supervised the construction of these works from their inception to completion and operation.

AN ATTRACTIVE VILLAGE FIRE HOUSE

NEW FIRE STATION, SEA CLIFF, N. Y.

A modern, fully equipped fire station has recently been completed in this Long Island village of 3,500 people. The building, which is in Tudor Gothic style, was designed by Meyer and Mathieu, architects, of Brooklyn, N. Y. On the main floor is a large room for seven pieces of fire apparatus, with hose shaft, repair and storage rooms, lavatories, clothes dryers, battery-charging and compressed-air outlets, etc. The room is warmed and ventilated by three automatic blower heaters. A feature of the second floor is a large, handsome auditorium

Overcoming Tastes and Odors in Impounded Waters

By JAMES M. CAIRD
Consulting Chemist, Troy, N. Y.

THE control of tastes and odors in impounded waters is a complex problem, but one which fortunately is not involved in the use of all such waters. An odor may be fragrant or offensive; some tastes are pleasant; while others are distinctly disagreeable.

Odors are determined by several methods. Usually the water is shaken up cold in a wide-mouthed bottle with a glass stopper and then the stopper is quickly removed and a deep breath is taken at the mouth of the bottle. Faint odors may be intensified by heating the water in a beaker with a glass plate over the top, and then the plate may be quickly removed and the vapor inhaled. Odors are classified as earthy, aromatic, musty, disagreeable, etc., in various degrees, 1, 2, 3, 4 or 5. Trained observers sometimes give different descriptions of the same odor in water. Some of the descriptions given by consumers are not fit for publication.

The Causes of Tastes and Odors

The chief cause of tastes and odors in impounded waters is algae, particularly the essential oils which each individual organism contains. Decomposing vegetation, such as grass, wood, weeds and leaves, gives very distinctive tastes to the water, and trade wastes in even high dilution can make water highly unpalatable. Gas-house and coke-oven wastes produce tastes resembling that of carbolic acid, which are distinctly disagreeable, as are that tastes produced by wastes from canneries, wood pulp and sulphite mills; and the oil and salt water mixture from oil wells imparts a taste somewhat suggestive of kerosene.

Algae are flowerless plants of simple or complex structure without roots, stems or leaves. They are green, yellow-green, blue-green, red or brown, and when breaking up or decomposing they give off an odor which causes complaints. One of the most common types imparts a taste similar to that of geranium oils. Even minute quantities of these natural oils cause trouble. Oil of peppermint in the proportion of 1 part of the oil to 50 million parts of water will give a noticeable flavor. This is equal to 1 pound of oil to 6 million gallons of water.

Crude carbolic acid or phenol, as it is known chemically, plus liquid chlorine gives distinctive and disagreeable odor and taste in dilutions as high as 1 part to 750 million parts, or 1 pound to 90 million gallons of water. This trouble is generally more pronounced in the winter months.

Effects of Tastes and Odors on Health

Algae and phenol tastes and odors have not been shown to have any effect upon the health of water consumers. When they are present in a perfect water supply, however, people are immediately suspicious of the quality of the water and are likely to use water from unknown or polluted sources which may taste better but which is dangerous to health.

The tastes are sometimes more pronounced at the consumer's tap than at the source of supply, because during the flow of the water through the mains the algae may have broken up and liberated the essential oils.

Methods of Protection

When storage reservoirs are constructed for the impounding of public water supplies, stripping off the top foot of soil, which is chiefly humus, tends to reduce the color, odors and tastes in the water caused by vegetable decomposition. This does not, however, prevent a growth of algae. The most practical and economical method of protecting impounding reservoirs is to remove the vegetation from the shoreline, eliminating all brush and weeds; and as the water level falls, the vegetation should be removed from the exposed surface.

The water in reservoirs stratifies, with the upper few feet well saturated with oxygen owing to wind disturbance. The water below a depth of about 5 to 10 feet remains more nearly constant in temperature, and the decomposed organic matter accumulates, resulting in very strong tastes being imparted to the water and a depletion of oxygen.

At the time of the spring and fall "turn-overs" when the top layer of water is actually heavier than the water below, causing a reversal of the top and lower strata, sometimes in a few hours or over night, the more or less stagnant water is brought to the surface, where it may be drawn off and carry disagreeable tastes to the consumers.

An interesting example of the stratification of tastes in a public water supply occurred at the Naval Radio Station at Darien, Canal Zone, in 1916. The water for the use of the technical staff was pumped from an arm of Lake Gatun to an elevated steel tank and then run by gravity to a stone filter and sent to the various taps. The water when cold, about 80 degrees in the tropics, was very distasteful, and when heated was nauseating. The odor was recognized as resulting from the decomposition of algae, which flourish prolifically in the tropics, and samples were promptly taken of the water at the top, close to the intake and at 3-foot intervals to a depth of 15 feet. Microscopic analyses showed an almost total absence of algae in the upper 3 feet of the water, and counts running into the hundred thousands per cubic centimeter at depths of 6 feet and over. By simply unscrewing a length of intake pipe so that water was drawn from the upper 3 feet, the odors were practically eliminated.

In the operation of impounding reservoirs, it is advisable to have blow-off valves near the bottom of the reservoirs at the dam and to open them to change the lower layers of water rather than to allow water to waste over the spillway. Algae will develop in natural lakes, even in winter under the ice. Treatment in some cases is possible through holes in the ice, and through the streams entering the reservoir. Care should be taken not to apply copper sulphate in quantities that will kill the fish.

The storage of filtered, spring or well water in open reservoirs is likely to be accompanied by algae growths, unless there is good circulation and the storage is for a very short period. By covering these reservoirs, the

growth of algae is prevented. If the storage reservoir is small, it should be surrounded by a good, tight fence, and if the watershed is in a populous community, the same protection is advisable.

Sanitary surveys of the watersheds should be made as frequently as possible, and a constant patrol should be maintained. Fishing in reservoirs where the water supply of a community is impounded should not be permitted. The act of fishing is harmless, but some fisherman just will not be decent.

Treatment for the Prevention or Elimination of Algae Growths

The best known remedy for algae growths in reservoirs is copper sulphate. The dose depends upon the intensity of the growth and the kind of algae. The amount applied usually varies from 2 to 5 pounds per million gallons of stored water treated. If the temperature of the water is low, the strength of the dose should be slightly increased. If it is properly applied and thoroughly mixed, no fish will be killed; if the slight concentration of copper sulphate in any locality should kill fish, they should be promptly removed from the water, for sanitary reasons as well as for appearance.

Aeration, or, rather, atomization, will remove a large percentage of taste and odor from water. It will also remove free carbon dioxide, lessening the opportunity for "red water" troubles. After aeration, however, a reasonable period should be allowed to permit the excess air to escape, or it, too, may cause trouble.

Filtration will remove some odors and tastes. Slow sand filters are more efficient than rapid filters in this respect. The algae carried in suspension by the water to the filters are almost entirely removed.

If filtration is used, prechlorination or a divided dose will keep the filter beds clean and prevent bacterial "seeding"; and it is an added factor of safety. When first started, it is likely to cause some trouble due to the organic matter upon the sand.

Considerable success has attended the use of chlorine in some communities to overcome tastes and odors caused by algae. Usually, an excess dose of chlorine has been used, and then after a reasonable period the excess chlorine has been removed by sulphur dioxide or sodium hyposulphite.

In using the ortho-tolodin method for the determination of free or residual chlorine, care must be used that false readings are not obtained. Ortho-tolodin will react with several substances, such as iron and manganese. The tests should be run on both untreated and treated waters, in order that a check may be had on the water which contains the chlorine.

In some places ammonia has been used to prevent algae growths in filtered water reservoirs. It also prevents odors and tastes due to chlorine, but its use in connection with chlorine slightly delays the bacterial action of the chlorine. The water will, however, contain a residual chlorine for a longer period. Ammonia has also been used in some places very successfully in preventing odor and taste due to chloro-phenol compounds. Permanganate of potassium has also been used with considerable success. The ammonia and chlorine treatment has been found effective in some places where the water contains sulphite waste, which imparts a distinct taste to the water.

If the water contains much color, due to vegetable stains, the use of ammonia, lime, caustic soda or soda-ash, and, in fact, any alkali, is likely to increase the color. Some waters which are very low in organic matter cannot stand a dose of liquid chlorine of 1 pound per million gallons without producing odor and taste.

The old type of charcoal filters were very efficient in removing odor and taste, but after operating for a short time became prolific breeding grounds for bacteria. Activated carbon, powdered and applied the same as the coagulants, is the present-day method of removing odors and tastes. It is usually applied either as the water enters a settling basin or as it enters the filters, and it is deposited either in the settling basin or upon the surface of the filters, in the latter case having a double action in absorbing odors and tastes during its contact with the water and repeating as the water rushes by it into the filter. Some filter beds are now composed entirely of activated carbon.

Tastes and odors are sometimes caused by pipe coatings, where a water main is put into service too soon after a fresh coating of an anti-corrosion lining has been applied. In some places where concrete-lined cast iron or steel pipe, or concrete mains, have been installed, there have been complaints due to a flat taste of the water caused by a leaching of the lime in the concrete.

Where there is a dual supply of hard and soft water, the consumers will notice a change in taste and odor the instant changes are made in the supply. In each community and in each source of water supply a different problem is encountered. No sweeping generalization can be made which will offer a panacea for all tastes and odors in public water supplies. Each supply and each plant and method of treatment must be studied individually with great care in order to find the most effective and most economical method of removing objectionable flavors and odors.

A School Roof Playground for Small Children

IN New York City a playground for small East Side children and their mothers has just been opened on top of Public School 31, at Monroe and Gouverneur Streets. The roof has been equipped and made accessible by the Community Councils of the City of New York, an unofficial civic organization, in an effort to demonstrate to the city the economy of converting into playgrounds the 25 acres of school roofs available in congested areas. The installation of an outside elevator makes it possible to use the roof without opening the building and without climbing long flights of stairs. The elevator reaches each floor and so can be used by cardiac and crippled pupils during the school term.

Because the playground is restricted to pre-school children and their mothers, it is hoped that it will be valuable for health education as well as for recreation purposes. Pre-school children are ordinarily the most difficult group for health agencies to reach. A trained nurse supplied by the city Health Department will be in attendance at the roof every day to examine the children and to give health talks and demonstrations to the mothers. Two playground workers and a matron, paid by the Emergency Work Bureau, will also be in attendance. The cost of the elevator and of equipping the roof, which included installing toilets, amounted to $25,000.

Taxicab Regulation

*A Review of Its Present Status, Based Upon a Nation-Wide Survey**

By HAWLEY S. SIMPSON
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IN the early days of the taxicab its position in the transportation field was quite different from that of the present. The industry was comparatively unimportant, both financially and from the standpoint of transportation service furnished. Taxicabs were usually owned and operated by individuals who catered to a limited clientele willing to pay, for exclusive travel facilities, rates which the general public was unable to afford. Little attempt was made to engage in large-scale operation.

All this is now changed; the taxicab business has developed enormously under the control of large local and national corporations, until more than 100,000 taxicabs are in service in the United States at the present time. It has been estimated that in 1930 1,000,000,000 passengers paid $650,000,000 in taxicab fares and tips. In New York City, in the same year, the 20,000 taxicabs carried approximately 10 per cent as many passengers as did the combined rapid transit, street-car and bus systems. Estimated revenue, including tips, was $144,000,000, equal to 90 per cent of the revenue of all other public transit agencies in the city.[1]

Cut-Rate and Driver-Rental Cabs

Much of the recent rapid growth of the taxicab industry may be attributed to the introduction of the cut-rate taxicab, merchandising its services at prices so low as ultimately to be unprofitable to the operator. A discharged cab driver in Rochester is credited with having conceived the low-rate taxicab in 1927. Since that time the idea has spread throughout the country, until hardly a city has been free from taxicab rate wars. Sometimes these have lasted but a few days, while elsewhere, as in Washington, cut-raters have been operating for several years.

"Wildcat" taxicab operators have seriously affected the established transportation systems. In Washington, the revenues of the largest of the old-line taxicab organizations fell more than a half-million dollars during the first year of cut-rate competition. Electric railway and bus revenues in the same city have been reduced approximately 20 per cent, according to testimony given at a hearing before the Public Utilities Commission of the District of Columbia in October, 1931. These losses are attributed directly to the competition of the unregulated taxicab with the regulated mass carriers. Not being obliged to maintain a city-wide 24-hour taxicab service, cut-rate cabs operate along the transportation lines where the business is easiest to secure and, when several passengers use a single cab, the rates are often considerably below the fare charged by street railways and busses. In effect, the cut-rate taxicab is nothing more or less than the old-time jitney with a new name and a new fare schedule.

Despite the fact that cut-raters are able to operate at an apparent profit for some time, it was estimated by the Public Utilities Commission of the District of Columbia that, if all proper deferred charges were added to the immediate out-of-pocket expenses, the 4,600 cabs in the District were being operated at an average monthly loss of $90 per cab—a total of $5,000,000 a year in this one city.

How can such a condition exist? Primarily, it is because of the so-called peonage method of operation by which individual drivers lease low-priced passenger automobiles from taxicab "companies" for a stated daily rental charge, varying from $3 to $6, agreeing, in addition to pay the cost of gasoline, oil and repairs, *as well as assuming all liability for injuries to third parties and damage to property.*

The revenue remaining after having paid his contractual obligations represents the driver's income. Testimony has shown this to be so low that, under normal business conditions, such employment would be scornfully refused. The whole system depends upon a surplus of unemployed, many of whom can be induced to work for practically nothing in order to maintain a modicum of self-respect.

Accidents and Traffic Congestion

Under the highly competitive conditions induced by this method of operation, long hours of work are required to cover even the fixed charges; 16 and 18 hours are not uncommon. Reckless driving, flagrant violations of traffic regulations, overcharging and solicitation of tips are common, while drivers often refuse to accept passengers riding the longer distances permitted under the established zone.

As a consequence, taxicab accidents have shown a considerable increase in many cities. In Baltimore the Police Commission, according to newspaper accounts, reported that the original driver-rental company's cabs were involved in 84 accidents, of which 3 resulted fatally in the first 84 days of operation. The Baltimore Safety Council showed that this company's accident record per cab was from two to four times as high as that of the standardized taxi operators. The driver-rental company carried no public liability insurance and had no liquidating value, while the drivers were financially irresponsible and unable to carry their own insurance because of their meagre return. About all an injured person could expect from legal proceedings was an unsatisfied judgment.

One of the most serious aspects of the low-rate taxicab situation is the unnecessary traffic congestion caused when the streets are flooded with more vehicles than can be economically operated. A recent survey by the Cleveland Highway Research Bureau on Euclid Avenue showed that 33.8 per cent of the total vehicle traffic between 8 a.m. and 6 p.m. consisted of taxicabs and *that the ratio of empty to loaded cabs was 4 to 1.* Could this be reduced to one empty cab for every loaded cab, the report states, the total vehicle traffic on Euclid Avenue would be reduced by an average of 250 vehicles per hour during the 10-hour day, and 380 vehicles during the maximum hour.

Public Utility Regulation Endorsed

Legislative action to purge the industry of those elements which are tending to lower the taxicab business to the level of a "racket" has been endorsed by the National Association of Taxicab Owners, which favors the passage of laws to accomplish the following:

1. Place the taxicab under the control of state or city utility commissions.
2. Require evidence of public convenience and necessity before cabs are permitted to operate.
3. Require taxicab operators to furnish the regulatory commission or body with evidence that they can indemnify

* This article is abstracted from American Electric Railway Association Bulletin No. 389: "A Nation-Wide Survey of Taxicab Regulation," which was briefly reviewed on page 97 of THE AMERICAN CITY for June, 1932.

[1] Report of the Mayor's Commission on Taxicabs. New York, 1930, p. 11.

the public against loss from accidents.

4. Require all charges to be based on the taximeter.

5. Designate minimum and maximum rates, based on a study of operation costs, plus reasonable profit under the particular conditions existing in the localities in which the company is situated.

Adoption of these principles and the classification of the taxicab as a public utility whose operation is subject to the securing of a certificate of public convenience and necessity has been one of the recent outstanding developments in the situation. Lacking such laws, the qualifications of a taxicab operator are little more than those of a pushcart peddler; licenses being available to any citizen without a criminal record who can afford the down payment on a cab and the cost of a routine city license. Speaking directly to the point, the Advisory Committee on Taxicabs of the city of Toronto states that the taxicab business has long been considered a "logical haven into which the unemployed may drift . . . ." while one of the chief requisites of applicants for licenses is that "they be without visible means of support and have large families."[2]

A survey of state laws shows that the taxicab is already legally considered a public utility in nine states. Certificates of public convenience and necessity must be secured before engaging in the taxicab business in Arizona, Arkansas, Connecticut, Montana, Pennsylvania, Rhode Island and West Virginia. In Maryland certificates are required only in Baltimore, and in Colorado only in other than home-rule cities. In addition the Public Utilities Commission of the District of Columbia has jurisdiction over the rates of fare to be charged by taxicab operators, requires taxicab operators to file operating reports and supervises the service and safety of operation.

In several other states the public utilities commission has jurisdiction over taxicabs when operated solely or mainly outside of municipal boundaries. In these, however, the authority of the commission is so obviously negligible that they are not listed here.

In 34 of the 93 cities in the United States of more than 100,000 population and in at least 57 of the 283 cities of 25,000 to 100,000 population, the right to engage in the taxicab business is subject to the securing of certificates, by virtue of either state law or city ordinance.[3] In four of these: New York, Milwaukee, Akron and Racine, Wis., extensive authority over taxicab operation has been given to a local municipal body. In the other places limited administrative and discretionary authority, such as the power to promulgate rules and regulations which are not inconsistent with the ordinance and which may be necessary to insure a high character of taxicab service, has been delegated to a local body or official.

Public Liability Insurance

One of the most important provisions in taxicab legislation endorsed by the National Association of Taxicab Owners is that requiring operators to furnish the regulatory authority with evidence of ability to indemnify the public against loss from accidents. Customarily, public liability and property damage insurance is required, although in some cases a surety bond or indemnity reserve is acceptable. Often an official body is given authority to exempt from the provisions of the law taxicab operators making a satisfactory showing of financial responsibility.

Taxicabs in 15 states—Arizona, Arkansas, Connecticut, Illinois, Kentucky, Maryland, Massachusetts, Montana, Nebraska, New Jersey, New York, Pennsylvania, Rhode Island, Vermont and West Virginia—are subject to requirements of this character. The usual liability limits per taxicab are $5,000 for any one person injured, $10,000 for persons injured in any one accident, and $1,000 property damage. In some cases, reductions in the amount of insurance may be secured by fleet operators.

Investigation of the taxicab laws and ordinances in effect in 79 of the cities in the United States of more than 100,000 population shows insurance required in 66 cities—by city ordinance in 30 cities and by state law in 36 cities. Of 46 cities of 25,000 to 100,000 population, insurance was found to be required in 35 places. In 15 of these the provision is part of the city ordinance, and in 20 a part of the state law. The public liability and property damage limits show about the same range in both large and small cities as in states.

Taximeters and Rates of Fare

The National Association of Taxicab Owners proposes that all taxicabs be equipped with a taximeter to be used as the sole means for measuring the charge for services rendered. It is obvious that this eliminates both flat-rate and zone-rate cabs, but there is no assurance that cut-rate operations will be discontinued. Where no control over fares is exercised, meter rates as low as five cents for each 1/3-mile, as in Cleveland, may be tried by low-rate operators. This makes is especially important that, in adopting taxicab legislation, something more than a mere schedule of maximum meter rates be ordained. A compensatory scale of taxicab charges, to which all operators must submit, immediately abolishes every form of cut-rate taxicab service, provided the rates are high enough to enable the operator to make a fair return upon his investment.

This situation may be met in three ways: (1) by establishing a fixed fare to be charged by all taxicab operators; (2) by setting maximum and minimum limits between which any rate is legal; and (3) by adopting a minimum rate below which no other fare may be charged. Of the 125 cities investigated in the United States, 22 have rates of these types. *Fixed rates* are in effect in 10 cities; *maximum-minimum rates* in 10 cities; and *minimum* rates in 2 cities.[4] The most frequent initial charge is 20 cents for the first 1/3-mile and 10 cents for each 1/3-mile thereafter.

The matters here discussed by no means include all important measures of taxicab regulation. The allied problems of the establishment of taxicab stands and prohibition of unnecessary cruising are especially important and deserve careful study and treatment. So also are specifications prescribing the type of vehicle and equipment which may be licensed for taxicab service. Quite often, purpose-built cabs only are permitted. Prohibition of the peonage driver-rental system is being increasingly adopted, which should do much to reestablish the taxicab upon a sound business basis.

As the public comes to understand that regulation of the taxicab as a public utility is just as essential for the purpose of providing the proper kind of taxicab service as is the public control ordinarily exercised over such other essentials as water, gas and light, legislation of the character endorsed by the National Association of Taxicab Owners may be expected to be more widely adopted.

Free and unrestricted competition within the taxicab industry has been given a fair trial and has been found to be harmful to the best interests of the community and disastrous to the taxicab operators themselves. Adequate, convenient and responsible taxicab service can come only through restricting the right to engage in the taxicab business to those who are able to prove themselves qualified by experience and financial responsibility to operate a business endowed with a high degree of public interest.

[2] Report of the Advisory Committee on Taxicabs to the Board of Commissioners of Police of the City of Toronto, April 12, 1932, p. 30.

[3] Since this article was written four additional cities of more than 100,000 population have passed ordinances requiring certificates of convenience and necessity.

[4] As of July 25, 1932, the figures are: *Fixed rates*, 12 cities; *maximum-minimum rates*, 12 cities; *minimum rates*, 1 city; total, 25 cities.

TRAFFIC CONTROL AND FACILITATION

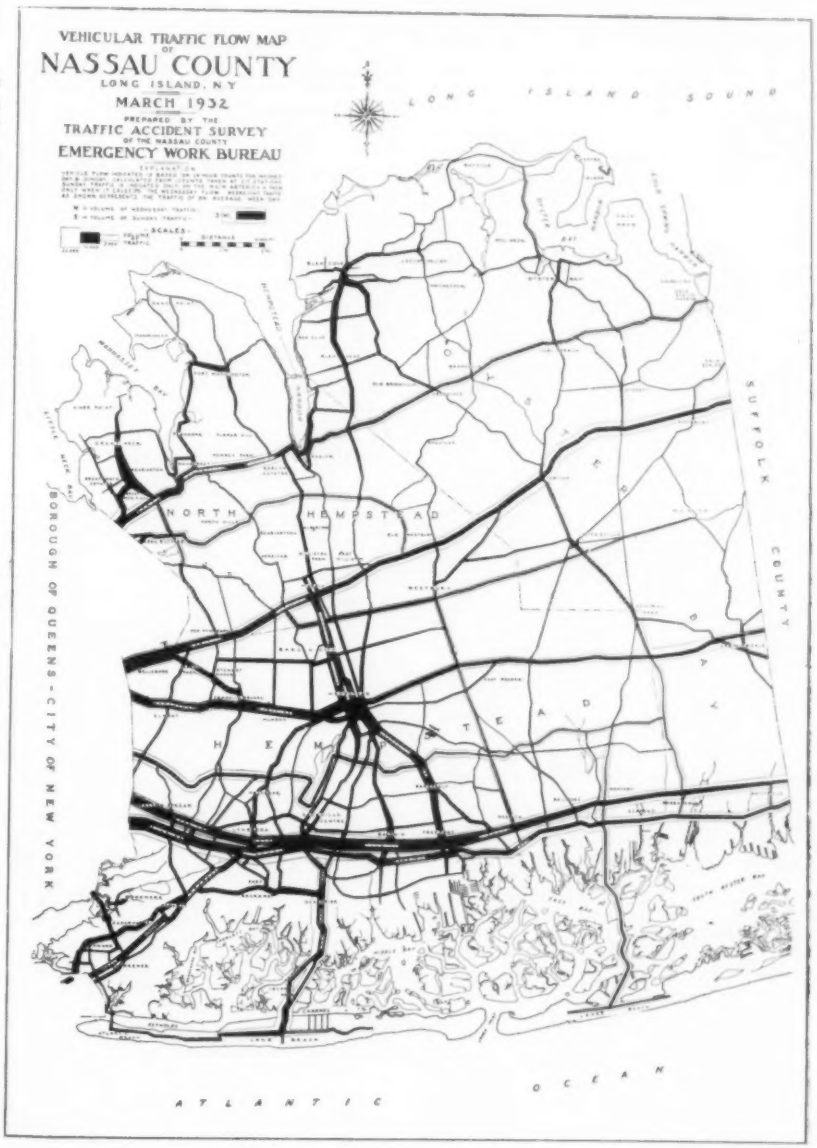
Conducted by Publications Committee, Institute of Traffic Engineers, 175 Fifth Ave., New York

Maxwell Halsey, Chairman, Hawley S. Simpson, Harry H. Hemmings, Arthur G. Straetz, I. S. Shattuck, P. J. Stupka, Donald M. McNeil

Analysis of Accidents, Nassau County, Long Island

DURING the spring of 1932, the Emergency Work Bureau of Nassau County, Long Island, of which Henry Root Stern is Chairman, undertook under the direction of Dr. Edward T. Devine, Executive Director, an analysis of traffic accidents occurring in various parts of the county.

In addition to the analysis of accidents, spot maps were prepared, physical conditions of dangerous intersections were investigated in the field, and the flow of traffic studied. The illustration herewith is the traffic flow map, which shows the heavy use of the east-and-west highways from the New York City line to points in or east of Nassau County.



Huntington Traffic Survey

MAYOR GEORGE D. BRADSHAW, of Huntington, W. Va., has announced the organization of a Traffic Commission, consisting of seventy members under the direction of A. W. Werninger, General Chairman. Dr. W. S. Rosenheim is Secretary.

The Directing Committee consists of the General Chairman, the Secretary, the chairmen of eight subcommittees, and representatives of the Manufacturers Club, the Huntington Business Men's Association, the West Virginia Federation of Labor and the Women's Club.

To each of the eight subcommittees is assigned one of the following studies:

1. Accident Study
2. Traffic Flow
3. Signs and Signals
4. Physical Conditions
5. Vehicular Routing
6. Parking
7. Enforcement
8. Traffic Code

The Safety Service of the Policyholders Service Bureau of the Metropolitan Life Insurance Co., of New York, was requested to assist and advise the Commission in the conduct of the factual study.

Field surveys have been made by various committees to show existing intersection movements of vehicles, the volume and classification of traffic, the use and demand for curb space, speed and delay studies, motorists and pedestrian observance of regulations, and cruising practices and cordon counts.

Information has been collected to show existing physical conditions such as street jogs, condition of pavement, widths of streets and roadways, curb radii, the location, types and characteristics of signs, signals and markings, present vehicular routes and other regulation and methods.

All of the factual information is now being analyzed. No reports are available at present.

Accidents in the United States During 1932

THE National Safety Council in Accident Facts, 1932 edition, estimated 8,500 motor-vehicle deaths in the first four months of 1932, compared with slightly more than 8,700 in the same months in 1931. This is a decline of nearly 3 per cent. The better record for 1932 holds for each of the months from February to April.

That this good showing is being continued is indicated by figures of the Department of Commerce for 86 large cities of the United States during the four-week period ended July 9, 1932, compared with the four weeks ended July 11, 1931. For the more recent period 522 deaths from automobile accidents were reported by these cities, as against 695 in the corresponding period a year ago—a drop of 25 per cent. The comparison for 52-week periods shows an 8 per cent decrease. Of the four-week totals the number of deaths occurring from accidents within the city limits was 405 in the 1932 period and 524 in that for 1931. This is an improvement of 23 per cent.

The Curb-Parked Car and Its Purchasing Power

By **R. T. DORSEY**
Traffic Engineer,
Los Angeles Street Traffic Engineering Department

OF the manifold traffic problems vexing authorities of American cities, none is more difficult than that of providing a proper balance in the use of streets in business sections for moving and for stationary automobiles. Merchants, desiring to capitalize every opportunity to invite trade into their establishments, oppose giving up the time-accepted privilege of parking at the curb in the immediate vicinity of their stores. Not only do they want parking, but in many cases, angle parking as well. When streets are very wide, or the volume of traffic is comparatively light, those in charge of traffic regulations usually hesitate to interfere with free curb parking, but as congestion increases, regulatory measures often become necessary.

Los Angeles has attempted to meet the parking problem by prohibiting all parking in the central traffic district between 4:30 and 6:00 p.m., and by limiting parking during the remainder of the business day to 45 minutes. In addition, parking is prohibited in certain zones at all times. These restrictions have not been entirely satisfactory on a number of east-and-west streets, which are not only narrower, but carry considerably more traffic than the north-and-south streets. Consequently, considerable effort has been made to have parking prohibited on these streets. This has been consistently opposed by landowners and merchants, who have contended that it would make serious inroads into volume of retail trade.

To supplant rather vague contentions with facts, the Los Angeles Street Traffic Engineering Department made a careful parking survey of these east-and-west streets. Using men who otherwise would be unemployed, the Department placed crews of four in each of the twenty-six blocks under consideration. Each driver of each parked car was approached and the following data obtained: type of car; license number; time parked; time departed; number of occupants; number of occupants discharged; destination of discharged occupants; purchases (if any); type of purchase; and amount spent. In all, 4,498 cars were parked within the area; full information being obtained from 4,200, or 94 per cent.

It was found that each curb-parked car had an average purchasing power of $2.15, although 68 per cent of the cars parked represented no retail business whatsoever. The average car was parked 31.3 minutes, although 20 per cent overstayed the 45-minute parking limit, generally for but a very few minutes. It was found that each parked automobile carried 1.4 persons. Of these, 1.2 persons were discharged; the remainder staying in the car.

The 4,200 cars contacted represented a total purchasing power of $9,032.73, although the merchants with frontage exclusively on the streets surveyed obtained only $1,443.89 in trade, or 16 per cent. The balance went to business houses on the longer north-and-south blocks. The four largest department stores alone obtained 22 per cent of the total amount spent. Restaurants got $116.11 in trade, and drug stores $92.69.

Dividing the money spent on the east-and-west streets (excluding the large department stores with double frontage) equally among the 597 business establishments located thereon, it was found that *the average merchant could expect only 3.4 mills in business from an average parked car.*

In an endeavor to determine the possible loss in business to merchants due to prohibition of parking, the Department checked the available off-street parking space within 300 feet of the blocks under consideration. This showed a total off-street parking capacity of 8,436 cars, with an unused storage capacity for at least 2,814 machines during the hour of maximum parking. As there was room at the curb for only 383 cars at any one time, it is evident that available off-street parking space is approximately seven times the curb parking accommodations. This indicates that parking prohibition would result in no loss of trade, provided the drivers were willing to pay a small off-street parking fee. This seldom exceeds 25 cents for a period equivalent to the parking time limit, and in many cases is only 10 cents.

Motoring Regulations in the Various States

THE American Automobile Association has issued the 1932 "Summary of Motor Vehicle Regulations, United States and Canada," prepared by its Legal and Research Department, with the cooperation of the Albert Russel Erskine Bureau for Street Traffic Research, Harvard University, and has declared that substantial progress is being made toward uniformity in the basic regulations governing the movement of the nation's 22,000,000 passenger cars.

In every state the driver involved in an accident is required to give his name and other information to the driver or occupants of the other car, whether the accident results in personal injury or property damage alone. In most states a formal report of an accident involving personal injury must be filed with the proper official.

The situation regarding registration and licenses is confused, but it is stated that in general a motorist who has complied with the registration and driver's license laws of his own state will have few difficulties.

Speed laws vary from 50 miles an hour in North Dakota to the 25-mile *prima facie* limit in Missouri. Fifteen states have discarded the fixed speed limit. Overtaking on hills or curves where view is obstructed is prohibited in 34 states and the District of Columbia. Coasting down-grade in neutral is severely dealt with under the laws of 24 states. In 32 states the passing of a street car on the left is prohibited.

Eleven states require a full stop before crossing railroad tracks; six others, and the District of Columbia, require a full stop at special stop signs. Parking on the main traveled portion of the highway is a violation of most state codes. The laws of sixteen states require that lights be dimmed when approaching vehicles.

The Municipal Bond Market

THE following is a representative list of recent sales of new issues of state and municipal bonds, taken from current issues of *The Bond Buyer*:

Amount	City or Other Public Body	Rate (%)	Term (Years)	Basis (%)
$2,744,250	Massachusetts	3¾	2.9 (avg.)	3.27
100,000	Newton, Mass.	3¾	7½ (avg.)	3.54
1,600,000	New Hampshire	4¼	9¼ (avg.)	4.12
800,000	Fort Wayne, Ind.	4¼	2-26 (ser.)	4.23
105,000	Burlington, Iowa	4½	12½ (avg.)	4.40
600,000	St. Paul, Minn.	4½	18 (avg.)	4.45
1,000,000	Louisville, Ky.	4½	36 2/3	4.49
120,000	Portland, Conn.	4¼	1-24 (ser.)	4.55
275,000	Ithaca, N. Y.	4¾	14 (avg.)	4.63
150,000	Bridgeport, Conn.	5	1-30 (ser.)	4.98
2,000,000	Los Angeles Co., Calif., Flood Control Dist. 5	5	16 1/3 (avg.)	5.00
450,000	Lansing, Mich.	4½	3-20 (ser.)	5.07
1,112,000	Mercer Co., N. J.	5½	13 (avg.)	5.43
141,500	Tarrytown, N. Y.	5¾	10.4 (avg.)	5.73
2,420,000	Yonkers, N. Y.	6	4 5/6 (avg.)	5.99
601,600	Franklin Co., Ohio	6	3¾ (avg.)	6.00
1,960,000	Cuyahoga Co., Ohio	6	3¾ (avg.)	6.00
1,012,000	Englewood, N. J.	6	19½ (avg.)	6.09

Special Water Rates at Resort Cities

A Study of Charges in New Jersey and Florida, Where Short-Time Residents Form Large Part of Consumer Population

A STUDY of a group of cities along the New Jersey shore and in Florida shows that, contrary to the usual belief, the short-time resident who is using the community as a summer or winter resort is not charged an exorbitant rate by the local water department. The only penalty, if it may be termed such, is in the requirement that each and every consumer pay a minimum charge, usually determined by the size of the meter whether or not a specified amount of water is used.

Allenhurst, N. J.

No special water rates are included in the Allenhurst billing for summer residents, inasmuch as the borough bills and holds the property owner. It is understood that some of the property owners who rent their homes for the summer collect charges from their tenants for water used during their tenancy. The borough makes readings at a cost of 50 cents, from which the owners compute their bills. The minimum water charge in Allenhurst is $15.00 per year, payable July 1 each year. This charge is payable whether any water is used or not, and entitles the consumer to 60,000 gallons. If more than that amount is used during the year, a bill is rendered at the rate of 30 cents per 1,000 gallons for the next 100,000 gallons, and for each 100,000 gallons used thereafter the rate is decreased 5 cents per 1,000 gallons until a minimum of 10 cents per 1,000 gallons is reached. Water rents are a lien upon real estate, and property owners are thus made responsible for any delinquency in the matter of payment.

Atlantic City, N. J.

Atlantic City, N. J., one of the leading resort cities on the Atlantic coast, makes no special charge for its summer residents. It does maintain a schedule of assessed rates or flat rates on which the minimum rate for meter charges is based. These revised rates have been in force since July 7, 1903. This minimum rate is the least amount which is accepted as a payment for water for the given property for one year unless a property remains unoccupied for one year from August 1, in which case the water rent is one-half the minimum rate fixed in this schedule. The payment of the minimum rate entitles the consumer to water to the amount of the minimum charge computed at the meter rate. All water used in excess of this amount is paid for at the same rate, but no allowance or reduction is made in case the amount of the minimum is not used. When the assessed or flat rate charges against a property do not exceed $10.00, the minimum rate is $5.00; where the assessed rate is between $10.00 and $18.00, the minimum rate is $10.00; assessed rate between $18.00 and $25.00, minimum rate $13.00; assessed rate between $25.00 and $35.00, minimum rate $18.00; assessed rate between $35.00 and $50.00, minimum rate $25.00; assessed rate between $50.00 and $70.00, minimum $35.00; assessed rate between $70.00 and $100.00, minimum $50.00; where the assessed rate is more than $100.00, the minimum rate is $75.00. The meter rates are 12 cents per 1,000 gallons.

Atlantic Highlands, N. J.

The city of Atlantic Highlands has a uniform charge of $2.80 per 1,000 cubic feet of water, the minimum charge being $12.00 per year. There are no special rates, but in the case of summer residents, the property owners usually have the balance of the minimum charge to pay.

Belmar, N. J.

The rules and regulations of the Belmar, N. J., Water Department make no special provision for supplying water to summer residents, the regulations applying to all services. The meter rates for all water supplied are $2.50 per 1,000 cubic feet for the first 50,000 cubic feet used in the calendar year; $2.00 per 1,000 for the next 50,000 cubic feet; $1.50 per 1,000 for the next 50,000 cubic feet, and $1.25 per 1,000 for all over 150,000 cubic feet used each calendar year. There is a minimum charge, based on the size of the meter, due and payable on the first of January of each year as follows: for a ½- or ⅝-inch meter, $12.50 per year; ¾-inch meter, $20.00 per year; 1-inch meter, $40.00 per year; 1½-inch meter, $75.00 per year; 2-inch meter, $100.00 per year; 3-inch meter, $200.00 per year; and 4-inch meter, $400.00 per year. These rates apply to water furnished within the borough of Belmar. For service immediately outside the borough where no extension of main is required, the charge in each case is twice the charge for the corresponding service within the borough limits.

Cape May, N. J.

In its water ordinance, adopted April 22, 1930, the city of Cape May, N. J., provides no special rates for summer residents. Two classes of rates are set up—flat rates and meter rates. Provision is made for a fiscal year starting July 1, and all rents, including minimum meter rates, are payable in advance. If the water rates are not paid by August 7, the water inspector, upon notification by the city clerk, cuts off the supply of water on the premises. The water is not turned on again until the bill is paid, plus a charge of $2.00 for turning off and turning on the water. To all water bills not paid within 30 days after the bill has been mailed by the water clerk, but in no case earlier than August 1, a penalty of 5 per cent is added. The meters are read quarterly, and as soon as a reading shows an excess over the maximum allowed, that excess is billed at the meter rate given below. A penalty of 5 per cent accrues one month after the date of mailing the bill. All water rents, either flat or meter, together with all penalties accrued, become a lien on the property supplied and remain so until satisfied.

Meter Rates

First	20,000 gallons per year,	75c	per 1,000
Next	20,000 gallons per year,	60c	per 1,000
Next	20,000 gallons per year,	50c	per 1,000
Next	20,000 gallons per year,	40c	per 1,000
Next	20,000 gallons per year,	30c	per 1,000
Over	100,000 gallons per year,	20c	per 1,000

A definite minimum charge based on the size of the meter installed is made, and the size of meter chosen is based on the number of rooms served. However, if the size of the meter actually installed differs from the size of meter shown in the following table as being proper for a property of that size, the size of meter and not the size of the property governs the minimum charge.

Number of Rooms	Size of Meter	Minimum Yearly Charge for Occupied Building, Irrespective of Length of Occupancy
Up to 6	⅝	$15.00
6- 8	⅝	20.00
8-10	⅝	25.00
10-12	¾	30.00
12-16	¾	35.00
16-50	1" up	$2.25 per room
Over 50		2.00 per room

In case a property in which a meter has been installed is vacant during any entire fiscal year and no water is used, there is a minimum charge, in lieu of other charges, of $5.00 per year to compensate the department for the cost incurred in being ready to deliver water. Should leakage in a vacant house consume more water than $5.00 worth, figured at the regular rate, a bill for such water is rendered.

Seagirt, N. J.

Seagirt, N. J., which is essentially a summer community, has no flat rate or

meter rate, the water charge being included in the general taxation, the same as the Police and Fire Department services.

Spring Lake, N. J.

No special charges are made for water furnished to summer residents in the borough of Spring Lake, N. J. The minimum water rent for any cottage or other building in which water is taken from the water system of the borough is $25.00 per year. This minimum payment entitles the consumer to 50,000 gallons of water or less during the year; for each additional gallon in excess of this 50,000 gallons, water is furnished at the rate of 30 cents per 1,000 gallons. For each building conected with the water system but where no water is used during the year, there is an annual charge of $5.00. In addition to the schedule above for water consumption the following schedule is used to determine the fixed annual rate for meter charges:

1" meter, 50,000 gallons.....	$ 8.00
1½" meter, 50,000 gallons.....	23.00
2" meter, 50,000 gallons.....	35.00
3" meter, 50,000 gallons.....	160.00
4" meter, 50,000 gallons.....	175.00
6" meter, 50,000 gallons.....	300.00

Seaside Heights, N. J.

A comparatively low system of flat rates has been established in Seaside Heights, taking into consideration the fact that in many cases the water is to be used by summer residents alone, and it was felt that the borough should give all consumers an equitable rate. The minimum flat rate charge is $10.00 a year.

Seaside Park, N. J.

No special water rates are charged in Seaside Park, N. J., for summer residents. Bills are rendered quarterly for water used, at the following rates: for the first 25,000 gallons used in excess of the amount allowed for the minimum charge in any quarterly period, 34 cents per 1,000 gallons; for the next 30,000 gallons, 32 cents per 1,000 gallons; for the next 35,000 gallons, 30 cents per 1,000 gallons; and for all water in addition thereto used during one quarterly period, 28 cents per 1,000 gallons. The following rates are fixed as the minimum charges per year for each water meter used, regardless of the amount of water used and consumed. These minimum charges are payable on July 1 of each year and are allowed as a credit upon the consumption charges listed above.

Minimum Charge per Year	Gallons Allowed Each Quarter
⅝" meter, $12.00	9,000
1" meter, 32.00	24,000
1¼" meter, 50.00	37,500
1½" meter, 75.00	56,000
2" meter, 130.00	97,500
3" meter, 290.00	217,500

Daytona Beach, Fla.

In Daytona Beach, Fla., where the winter resident is the short-time water user, no special charges or rates are made. The municipal water department charges 20 cents per 1,000 gallons, plus meter maintenance charge.

Size of Meter	Per Quarter	Deposit
¾".....	$1.25	$5.00
1".....	1.75	7.50
1¼".....	2.25	9.00
1½".....	2.75	11.00
2".....	3.50	14.00
3".....	5.00	20.00
4".....	6.00	24.00
6".....	7.50	30.00

West Palm Beach, Fla.

The West Palm Beach Water Co., West Palm Beach, Fla., which supplies West Palm Beach and Palm Beach, makes no special rate to short-time residents. The schedule of rates is designed to the advantage of the permanent. The annual service charges, based on the size of meter are: ⅝-inch meter, $9.00; ¾-inch meter, $15.00; 1-inch meter, $20.00; 1½-inch meter, $40.00; 2-inch meter, $65.00; 3-inch meter, $125.00; 4-inch meter, $190.00; 6-inch meter, $375.00; and 8-inch meter, $625.00. The consumption charge in addition to the service charge is 21 cents per 100 cubic feet for all water used except water used for fire protection through authorized private lines.

The Race Problem at Swimming Pools

A Group of Reports from Representative Cities

A NEWS article from Pittsburgh one day last summer carried accounts of a riot between Negroes and white youths at the new $150,000 Highland Park swimming pool. Fifty policemen restored order only after a half-dozen people had been injured. This was the third disturbance at this new pool within the three weeks after its opening. Such occurrences bring up again the question: "What should be the attitude of park and recreation officials toward race segregation in the use of swimming facilities?" To this question, as asked park and recreation authorities in various sections of the country, the replies which follow have been received:

William D. Champlin, Chief of Bureau, Department of Public Welfare, Bureau of Recreation, Room 432, City Hall Annex, Philadelphia, Pa., says:

"In many of our public pools colored and white bathe together without any contention. Some of our pools are located in neighborhoods that are almost entirely colored and very few if any whites make use of them. Even in neighborhoods where the races are pretty well divided, there is no discrimination whatsoever shown. I can safely say that we do not have any difficulties or problems regarding this race question in the public swimming pools."

William J. H. Schultz, Superintendent Small Parks and Playgrounds, West Chicago Park Commissioners, 100 North Central Park Boulevard, Chicago, Ill., says:

"There are 15 swimming pools in the West Park system. Among these, two are used by both white and colored people. The others are used entirely by the white race. In the two pools first mentioned, the colored race predominates, and we are not having any difficulty. The two races do not interfere with each other at all, although they use the pool during the same periods. Most of the caretakers are white. From 400 to 600 make use of these facilities each hour on the hourly batch system. All are treated alike. A member of the Police Department, who travels in and out, is assigned to each pool. He is ready in case of emergency. Up to this time there have been no difficulties at any of our swimming pools."

C. E. Brewer, Commissioner of Recreation, 504 Elmwood Avenue, Detroit, Mich., makes this constructive contribution to the discussion:

"In some cases, both white and colored use the same pool at the same time; in other pools the colored people prefer to go in at a time by themselves. In all cases we try to accommodate them as to the time they desire. We never refuse admittance to anyone. Minor difficulties have arisen, but we have always succeeded in ironing them out. I have an advisory committee composed of 125 of the prominent colored men and women in the city and we get together and settle all difficulties as they arise. We have two pools in the city of Detroit where the attendance is over 95 per cent colored. I would strongly advise any city to organize a group of prominent colored men and women, and I think that all difficulties can be settled amicably."

Corinne Fondé, Superintendent, Department of Recreation, City Auditorium, Houston, Texas, says:

"There is no race conflict in our recreation work in this section of the country. Negroes accept the custom of operating separate facilities for the two races. We have separate schools, playgrounds, churches and all such places for social gatherings. We are therefore not in a position to offer suggestions based on any sort of experience with the problem of operating joint activities for Negroes and white people."

K. B. Raymond, Director of Recreation,

Board of Park Commissioners, Minneapolis, Minn., says:

"Minneapolis, to date, has had no race problem on its bathing beaches. We have a very small colored population. A large majority of these people live on the North Side and of course use the bathhouse which lies closest to their district. The whites and colored use this beach without any conflict."

Robert E. Coady, Supervisor of Playgrounds, Public Recreation Commission, Cincinnati, Ohio, writes:

"The Public Recreation Commission has operated all public recreational facilities in Cincinnati for five years through the cooperation of the Park Board. During these five years, two of the eight outdoor swimming pools constructed were located in districts where almost all the residents were colored. It must be borne in mind that all of our swimming and wading pools built on the playgrounds are only 3½ feet in depth, which provides swimming for the children but is not so inviting to the old people, although they are kept open in the evening hours for community groups. A member of our supervisory staff, who is colored, heads up recreational activities in districts occupied mainly by a colored population. It is the policy of the Public Recreation Commission of Cincinnati to serve all groups in the city, irrespective of color, class or creed, to the best extent of our financial ability. We have worked hard in an honest endeavor to serve all citizens and give them more adequate recreational facilities and leadership. Our colored supervisor is constantly studying the problems and needs of the people of the colored race. The Commission realizes that the colored people have legal rights as citizens, and it is doing its best with a limited budget to provide as good facilities in districts occupied by Negroes as in those occupied by whites."

In Seattle, the Negro population is very small. E. F. Hoffman, Park Engineer, says:

"We have ten bathing beaches, seven of which are on fresh water and three on salt water. There is only one beach at which we have Negroes in any considerable numbers. At this beach there are two floats, and the Negroes for the most part segregate themselves. We make no effort to segregate them nor do we post notices. The segregation is entirely voluntary. They use the beaches at all hours just the same as the white people. We have had no difficulties with them. We occasionally have a complaint from white people, but the volume of complaints is not large."

Raymond E. Hoyt, Superintendent, Department of Playground and Recreation, Los Angeles, Calif., gives this account:

"Up to June, 1931, this Department did not permit persons of African descent to swim in the municipal swimming pools at the same time with whites, when we were enjoined upon two occasions by our Superior Court, and two trials were held, both on practically the same question and under practically the same conditions. One Judge brought in the decision that the Department could make rules to regulate its swimming pools for the best interests of all the people. He interpreted the law to mean that the city has no right to discriminate against Negroes by not giving them equal facilities, but stated that equal facilities does not mean the same facilities, and we would therefore have the right to separate the races. Subsequent to this opinion, however, another Judge of the Superior Court brought in an entirely different decision and permanently enjoined us from making any separation. The Los Angeles City Council refused to carry the case to a higher court and therefore the last decision now stands. Since June of this year we have permitted both Negroes and whites to use our pools at the same hour. We have experienced no serious difficulties; however, we are constantly alert in regard to this situation."

Josephine D. Randall, Superintendent, San Francisco Playground Commission, says:

"In San Francisco we have very few Negroes, probably not more than about 3,000 in the entire city, and we have practically no race problem. We have colored, orientals and whites attending the same schools, the same playgrounds and the same swimming pools. There has never been any question regarding the attendance of colored and orientals in our pools. This may be due entirely to the fact that they are so greatly in the minority."

W. A. Kearns, Superintendent of Recreation, San Diego, Calif., says:

"We are probably in a situation different from that of most cities regarding this matter. We have schools which have a large colored attendance—Mexicans and Negroes, and white children attend in some districts in great numbers. We also have a playground and recreation program and have provided what we think are very appropriate facilities for such racial combinations. We have the swimming pool in San Diego Bay, which is attended by all these people regardless of race, creed or color, at the same time. This swimming pool, however, is surrounded by San Diego Bay on all sides, where there are floats and plenty of room, and the pool is constructed as a large cage, which can be raised and lowered in the bay to any depth desired. In some instances we have had complaints regarding mixing black and white in other classes, but we have overcome this by offering special social and recreational work for Negro groups similar to those organized for Mexicans and whites. If we had a regular swimming pool in a city park in the region, I am sure we should have more trouble, but I believe that a schedule calling for exclusive time for colored people, a similar time for white people, and another time for any and all, would solve the problem. The exclusive time for white and for black then would be considered a special privilege instead of a restriction."

B. G. Nunnelly, Secretary, Board of Park Commissioners, Louisville, Ky., writes:

"Out of twenty-six parks and playgrounds in the city of Louisville, there is only one which Negro and white children are allowed to use together, and in this instance they are kept entirely separate, different equipment is used, and intermingling is not allowed. There are three municipal swimming pools in Louisville, two for white and one for colored, and neither race is allowed to use the other's pool. We have in the city of Louisville a very beautiful natural park of about eighteen acres used exclusively for Negroes. We do not have the slightest trouble in any way with the race question here in Louisville.

"We have a natural park of 76 acres, on the banks of the Ohio River, used only by Negroes. This park has tennis courts, baseball diamonds, flower-beds, etc., and is one of our most beautiful parks. Whites are not allowed in this park."

Cancer Control as a Municipal Function

SINCE cancer is not a contagious disease, it is not reportable and practically no measures are now taken against it by most local health departments. In a few of the larger cities, such as New York and Detroit, municipal cancer hospitals and clinics have been established. A number of city health departments have carried on educational activities, but these are most often left to voluntary cancer committees affiliated with the American Society for the Control of Cancer.

The reporting of cancer to health departments is advocated by Dr. James A. Tobey, former contributing editor on public health for THE AMERICAN CITY and author of the book for the general reader entitled "Cancer: What Everyone Should Know About It," recently published by Alfred A. Knopf, of New York. Such reporting would help to increase our knowledge about this malady, would stimulate physicians to make early diagnoses, would encourage the patient to use the best methods of treatment, which are now conceded to be surgery and irradiation, and would help to inhibit the nefarious activities of quacks, who still prey on many cancer patients. Since there are now only 17 special cancer hospitals in this country, and all students of cancer are agreed that such institutes are desirable, Dr. Tobey states that health officials can perform a real service by inducing community leaders to provide these necessary facilities.

More persons in this country die of cancer than of all infectious diseases combined, except tuberculosis, and more die of cancer than of tuberculosis—many of these deaths avoidable by prompt action.

FORWARD STEPS

Reported by

Municipal Officials, Chamber of Commerce Executives, and Others

Fire Stations Effectively Landscaped

SAN ANTONIO, TEXAS.—Beautification of the fire stations in this city was started in 1924, when a nursery and greenhouse were provided in a plot in the rear of Station 18, chosen because its grounds offered a large unused area admirably suited to gardening purposes. From the first it has been our plan to use shrubs and perennial plants exclusively. The shrubs are mainly evergreens, giving the stations a green environment the year around.

When we started, Station 18 was just a typical fire station of the cottage type. It was an attractive building, but was on a bare plot of ground and had nothing distinctive to commend it to the eye of the public. Since then the station has been landscaped with more than 40 different varieties of evergreen and deciduous trees and shrubs, arranged in a pleasing manner to give a very attractive setting.

The beautification program has continued until today all of the city's eighteen fire stations that offer any open ground space have been landscaped in an effective manner. This work has been effected and is now maintained at practically no cost to the city. The firemen themselves did all the work about the nursery. They borrowed city trucks and brought in soil from the country, built the lawns, and when the time came, transplanted the shrubs and trees to their permanent locations, and they now train and water the shrubbery on the grounds of the different stations.

Through a Southern seedsman we bought tree seed from Japan, China, Mexico, and South America. Our nursery stock was started both from seeds and cuttings, and we raised all the trees and shrubs that now grace the grounds of the different stations. It has been estimated that the nursery at Station 18 turned out at least $8,000 worth of trees and shrubs.

To Senior Captain Arnold L. Rathke of Engine Company 18 should go much of the credit of making our beautification program a success. Captain Rathke has a natural bent for tree culture. He has added to this by years of home study and practice. He has been in charge of this activity from the beginning and has worked faithfully with the writer of this sketch in laying plans and putting procedure into operation.

Under Captain Rathke's supervision, the nursery at Station 18 was put in condition. Since the climate in San Antonio is mild, heat furnished by a layer of horse manure under the top soil was sufficient to tide our tender plants in the green house through the winter. Frames of slatted latticework, placed over beds in the nursery, protected the plants from too much sunlight. After the shrubs had made sufficient growth, they were lifted from their positions, bagged and taken to the different stations.

Because of the mildness of our winter climate, we have used quite a number of shrubs and trees about the stations. Some of these, the broad-leaved evergreens in particular, cannot withstand the rigors of more northern winters, but there are so many hardy evergreens and deciduous plants that the station gardener should have no trouble in finding suitable combinations for his grounds anywhere in the United States.

In conclusion, it should be mentioned that Fire and Police Commissioner Phil Wright holds the beautification work of the city's fire stations in high esteem and has given it enthusiastic support.

J. G. SARRAN,
Chief of Fire Department.

Chamber of Commerce Promotes Community Music as a Leisure-Time Activity

FORT WAYNE, IND.—Almost everyone is finding more leisure time than ever before, and cultural pursuits are attracting more and more attention on the part of people in all walks of life. With this thought, the Fort Wayne Chamber of Commerce cast about for ways of developing and directing a city-wide program of cultural interest to all the citizens, and the idea of re-creating a desire for music in the home was adopted as the best medium for such a program.

Inquiries made among the musically minded of the city seemed to indicate a lessening of interest, particularly on the part of young people, in a musical education or career—largely due, it was felt, to lack of incentive. This suggested the idea of reviving musical competitions and the formation of definite musical groups.

Accordingly, a committee of the Chamber of Commerce was appointed consisting of the heads of the music departments of the public and parochial grade and high schools, the director of a local symphony orchestra and Philharmonic Society, the director of music in a local college, and laymen having musical tastes, the entire committee numbering fifteen people. Care was taken to see that no commercial music teachers or others engaged professionally in music were placed on the committee, so that there was no stain of commercialism.

A preliminary organization meeting of the committee, known as the Chamber Music Committee, was followed by the adoption of a program, the first step of which was to ascertain who in the city would be interested in participating in such an activity. Through the newspapers the public were informed as to

A SAN ANTONIO FIRE STATION BEFORE AND AFTER DEVELOPMENT OF PLANTING

San Antonio, in keeping with the landscaping treatment of its parks and public building grounds, has been applying similar treatment to its fire stations, under the direction of Fire Chief J. G. Sarran. At the left above is shown the appearance of Station 18 about six years ago, just after a landscaping plan had been instituted; at the right is the same station in its present setting

the plans under way, and through coupons in the papers and blanks circulated in every school in the city, 2,516 people signed as participants, with more coming in each succeeding week. Sixty-seven groups with a total of 266 individuals have already been formed.

It was decided that there should be not less than two nor more than eight people in each group, since groups of this size could be more easily organized and would more readily fit into the plan of meeting in the homes of the group members for practice and recital. Such groupings afforded ample scope for combining various instruments—stringed, brass and woodwinds—according to a schedule worked out by the committee, with or without piano, organ or harp in each case.

Jazz and purely so-called popular music is barred, and even symphonies are not encouraged. The various groups are expected to confine themselves to what is commonly known as chamber music.

As various groups become proficient in their rendition of the works of any of the composers they have selected, the head of the group notifies the Chamber of Commerce that they are ready for a recital. The Chamber of Commerce, in turn, assembles ten of these groups and holds a public recital in the Chamber of Commerce auditorium, which is free to all music devotees in the city. Already many of these recitals have been held, with large and appreciative audiences.

It is proposed that the work of the Chamber Music Committee shall culminate, each year, with a music festival held in May during National Music Week. Competent judges will select the best performers in each recital group, and these will compete during the May music festival. This was done this year, and almost 400 people attended the concert, which was participated in by 14 vocal and instrumental groups.

Already the attention of several national musical magazines has been attracted to the work that is being done, and two national organizations have asked permission to print and circulate, free of charge, a brochure telling about it. The citizens are much interested in the work and are earnestly backing the program.

J. B. WILES,
Manager and Industrial Commissioner, Chamber of Commerce of Fort Wayne.

An All-Metal Public Works Office Building

RICHMOND, VA.—The Richmond Department of Public Works has met an economic problem by erecting an all-metal office building, consisting of two stories and basement, at a cost of 19.1 cent a cubic foot. The Department was forced to move from the present City Hall because of the expansion of another department, and the new building has been planned to serve for from five to ten years, during which time it is hoped that a new City Hall will be built. One of the requirements of the new Public Works building, therefore, was high salvage value of the materials.

THE RICHMOND, VA., PUBLIC WORKS OFFICE BUILDING

After considering many rental and other propositions, plans for the present structure were accepted because they were found to be the most desirable from the point of view of both cost and usefulness, even after making due allowance for the annual cost of heat, light, janitor service and maintenance. The building, 50 by 116 feet, consists of a structural steel frame, in which the tonnage of steel is greatly reduced by the lightness of wall and floor construction. The walls weigh only 10 pounds to the square foot, the floors 20 pounds to the square foot.

The foundation of the walls up to the first floor level is of the usual concrete construction. Above the first floor, pilasters and entablature are of double-wall aluminum construction. The 4- to 7-inch void is filled with an insulating material which gives a resistance to heat transmission equivalent to that of a 48-inch brick wall. Glazed window-sash extend between the pilasters from the first floor level through to the underside of the entablature. Glass in the spandrel areas (beneath the windows) is aluminum-painted and the void between the glass and the inner sheet in the spandrel area is filled with the same insulating material used in the pilasters.

The architectural lines in the pilasters and entablature were produced by an extruded section of aluminum, which also provides the method of holding the aluminum sheets in place and fastening the entire aluminum façade to the structural frame. The pilasters were shop-assembled and then brought to the site. Twenty-two of the twenty-four sections were erected and secured in place by four men in one work day.

The floor and roof decks are of formed 20-gage copper-bearing steel sheets, supported on trussed joists. The floor deck is covered with unreinforced gypsum of sufficient depth to cover the underfloor duct system. The roof deck is covered with an insulating board on which is laid standard slag roofing.

The inside sheets of aluminum on the pilasters and under the window-sills have a rubbed finish which completely removes the sheen and gives a satin appearance, with a decided tendency to soften instead of reflect the light. The pilasters on the exterior are sand-blasted. The effect is a soft finish, very similar to limestone.

The plans were prepared in the Department of Public Works, of which Colonel R. Keith Compton is Director, by W. A. Childrey of the Bureau of Surveys and Designs. The building was occupied within four and a half months after the contract was let for excavating the foundations and basement area. The total cost was $43,399.76.

JAMES BOLTON,
Chief of Bureau of Surveys and Design.

Berkeley's Annual "Open House"

BERKELEY, CALIF.—This city of close to 100,000 population has adopted a plan to keep its citizens interested in the civic affairs of the community and to make them more intelligent voters and better able to discuss, with accurate facts and figures, what the city administration is doing, and how effectively.

One day each year, the Berkeley city government holds an "Open House," sponsored by the Berkeley League of Women Voters and the Berkeley Junior Chamber of Commerce, to which every resident of the city is invited. This year, more than 3,500 citizens of the city took advantage of the opportunity offered them to inspect the various city departments at work and to observe at first hand the activities being carried on by the city and paid for by their taxes.

With volunteer guides acting as lecturers, the citizen guests were taken in motor-busses on a tour of all the important city plants, including the Berkeley municipal airport, the city corporation yard and the sanitary fill, where the city-collected garbage is used to make filled-in land available for industrial purposes along the waterfront. At the City Hall, all departments of the city government cooperated in arranging special exhibits consisting of graphs, charts, engineers' drawings and other material which were put on display in the council chambers so that visitors might visualize vital facts about municipal activities.

Methods of operating Berkeley's famous police force and fire department were fully explained to the guests, including demonstrations of the police radio system, the lie detector and the new fire-alarm system, one of the fastest in the United States.

CHARLES C. ADAMS,
Managing Director, Chamber of Commerce.

Emergency Relief and Construction Act of 1932

Large Federal Loans Now Available for Direct Aid, Public Works, and Limited-Dividend Housing Projects

THE following is the complete text of the sections which are of general interest to state and local officials, of the $2,122,000,000 "Emergency Relief and Construction Act of 1932," approved by both Houses of Congress on July 16 and since signed by the President.

Suggestions as to procedure under Title II of the Act will be found on pages 5 and 82 of this issue.

Readers of THE AMERICAN CITY *wishing to obtain an official copy of the entire Act can do so on application to the Clerk of the Document Room, United States Capitol, Washington, D. C., or to the New York office of this magazine (470 Fourth Avenue).*

[PUBLIC—NO. 302—72D CONGRESS]
[H. R. 9642]
AN ACT

To relieve destitution, to broaden the lending powers of the Reconstruction Finance Corporation, and to create employment by providing for and expediting a public-works program.

Be it enacted, etc., That this Act may be cited as the "Emergency Relief and Construction Act of 1932."

Title I

Relief of Destitution

Section 1. (a) The Reconstruction Finance Corporation is authorized and empowered to make available out of the funds of the corporation the sum of $300,000,000, under the terms and conditions hereinafter set forth, to the several States and Territories, to be used in furnishing relief and work relief to needy and distressed people and in relieving the hardship resulting from unemployment, but not more than 15 per centum of such sum shall be available to any one State or Territory. Such sum of $300,000,000 shall, until the expiration of two years after the date of enactment of this Act, be available for payment to the governors of the several States and Territories for the purposes of this section, upon application therefor by them in accordance with subsection (c), and upon approval of such applications by the corporation.

(b) (c) and (d) [These three subsections of Section 1 cover rates of interest, terms of repayment and other conditions under which the funds authorized in subsection (a) may be applied for and administered by the states and territories.]

(e) Any portion of the amount approved by the corporation for payment to the governor of a State or Territory shall, at his request, and with the approval of the corporation, be paid to any municipality or political subdivision of such State or Territory if (1) the governor makes as to such municipality or political subdivision a like certificate as provided in subsection (c) as to the State or Territory, and (2) such municipality or political subdivision enters into an agreement with the corporation for the repayment to the corporation of the amount so paid, with interest at the rate of 3 per centum per annum at such times, and upon such other terms and conditions, as may be agreed upon between the corporation and such municipality or political subdivision. The amount paid to any municipality or political subdivision under this subsection shall not be included in any amounts reimbursable to the corporation under subsection (b) of this section.

(f) As used in this section the term "Territory" means Alaska, Hawaii, and Puerto Rico.

Title II

Loans by Reconstruction Finance Corporation

SEC. 201. (a) The Reconstruction Finance Corporation is authorized and empowered—

(1) to make loans to, or contracts with, States, municipalities, and political subdivisions of States, public agencies of States, of municipalities, and of political subdivisions of States, public corporations, boards and commissions, and public municipal instrumentalities of one or more States, to aid in financing projects authorized under Federal, State, or municipal law which are self-liquidating in character, such loans or contracts to be made through the purchase of their securities, or otherwise, and for such purpose the Reconstruction Finance Corporation is authorized to bid for such securities; *Provided*, That nothing herein contained shall be construed to prohibit the Reconstruction Finance Corporation, in carrying out the provisions of this paragraph, from purchasing securities having a maturity of more than ten years;

(2) to make loans to corporations formed wholly for the purpose of providing housing for families of low income, or for reconstruction of slum areas, which are regulated by State or municipal law as to rents, charges, capital structure, rate of return, and areas and methods of operation, to aid in financing projects undertaken by such corporations which are self-liquidating in character;

(3) to make loans to private corporations to aid in carrying out the construction, replacement or improvement of bridges, tunnels, docks, viaducts, waterworks, canals, and markets, devoted to public use and which are self-liquidating in character.

(4) to make loans to private limited dividend corporations to aid in financing projects for the protection and development of forests and other renewable natural resources, which are regulated by a State or political subdivision of a State and are self-liquidating in character; and

(5) to make loans to aid in financing the construction of any publicly owned bridge to be used for railroad, railway, and highway uses, the construction cost of which will be returned in part by means of tolls, fees, rents, or other charges, and the remainder by means of taxes imposed pursuant to State law enacted before the date of enactment of the Emergency Relief and Construction Act of 1932; and the Reconstruction Finance Corporation is further authorized and empowered to purchase bonds of any State, municipality, or other public body or agency issued for the purpose of financing the construction of any such bridge irrespective of the dates of maturity of such bonds.

For the purposes of this subsection a project shall be deemed to be self-liquidating if such project will be made self-supporting and financially solvent and if the construction cost thereof will be returned within a reasonable period by means of tolls, fees, rents, or other charges, or by such other means (other than by taxation) as may be prescribed by the statutes which provide for the project.

All loans and contracts made by the Reconstruction Finance Corporation in respect of projects of the character specified in paragraphs (1) to (5) of this subsection shall be subject to the conditions that no convict labor shall be directly employed on any such project, and that (except in executive, administrative, and supervisory positions), so far as practicable, no individual directly employed on any such project shall be permitted to work more than thirty hours in any one week, and that in the employment of labor in connection with any such project preference shall be given, where they are qualified, to ex-service men with dependents.

The provisions of this subsection shall apply with respect to projects in Puerto Rico and the Territories to the same extent as in the case of projects in the several States, and as used in this subsection the term "States" includes Puerto Rico and the Territories.

(b) The Reconstruction Finance Corporation shall submit monthly to the President and to the Senate and the House of Representatives (or the Secretary of the Senate and the Clerk of the House of Representatives, if those bodies are not in session) a report of its activities and expenditures under this section and under the Reconstruction Finance Corporation Act, together with a statement showing the names of the borrowers to whom loans and advances were made, and the amount and rate of interest involved in each case.

(c) (d) (e) [These three subsections of Section 201 cover loans for financing the marketing of agricultural products and livestock, and for the creation of regional agricultural credit corporations.]

(f) All loans made under this section, and all contracts of the character described in paragraph (1) of subsection (a), shall be fully and adequately secured. The corporation, under such conditions as it shall prescribe, may take over or provide for the administration and liquidation of any collateral accepted by it as security for such loans. Such loans shall be made on such terms and conditions, not inconsistent with this Act, as the corporation may prescribe, and may be made directly upon promissory notes or by way of discount or rediscount of obligations tendered for the purpose, or otherwise in such form and in such amount and at such interest or discount rates as the corporation may approve; *Provided*, That no loans or advances (except loans under subsection (c)) shall be made upon foreign securities or foreign acceptances as collateral.

(g) Each such loan may be made for a period not exceeding three years, and the corporation may, from time to time, extend the time of payment of any such loan, through renewal, substitution of new obligations, or otherwise, but the time for such payment shall not be extended beyond five years from the date upon which such loan was made originally: *Provided*, That loans or contracts of the character described in subsection (a) may be made for a period not exceeding ten years: *Provided further*, That loans or contracts of the character described in paragraph (1) or (5) of subsection (a) may be made for a period exceeding ten years when it is the judgment of the board of directors of the corporation that it is necessary to purchase securities as provided in such paragraphs and that it is not practicable to require the reimbursement of the corporation, within ten years, through the repurchase or payment of such securities, or in any other manner.

(h) The corporation may make loans under this section at any time prior to January 23, 1934.

(i) No fee or commission shall be paid by any applicant for a loan under the provisions of this section in connection with any such application or any loan made or to be made under this section, and the agreement to pay or payment of any such fee or commission shall be unlawful.

(j) No loan under this section shall be made to a railroad or to a receiver of a railroad except on the approval of the Interstate Commerce Commission. Any railroad may obligate itself in such form as shall be prescribed and otherwise comply with the requirements of the Interstate Commerce Commission and the corporation with respect to the deposit or assignment of security hereunder, without the authorization or approval of any authority, State or Federal, and without compliance with any requirement, State or Federal, as to notification, other than such as may be imposed by the Interstate Commerce Commission and the corporation under the provisions of this section.

Secs. 202-211 [These sections cover certain amendments to the Reconstruction Finance Corporation Act. None of these amendments directly affects loans from the Corporation to states or their political subdivisions, except Section 205, which authorizes the Corporation to borrow the $300,000,000 necessary to carry out the provisions of Title I and $1,500,000,000 for Title II of the new Act.]

Title III

Public Works

Sec. 301. (a) For the purpose of providing for emergency construction of certain authorized public works with a view to increasing employment and carrying out the policy declared in the Employment Stabilization Act of 1931, there is hereby appropriated, out of any money in the Treasury not otherwise appropriated, the sum of $322,224,000, which shall be allocated as follows:

(1) For expenditure in emergency construction on the Federal-aid highway system, $120,000,000. Such sum shall be apportioned by the Secretary of Agriculture to the several States by the method provided in section 21 of the Federal Highway Act, as amended and supplemented (U. S. C., title 23, sec. 21). The amounts apportioned to the States shall be available as a temporary advance of funds to meet the provisions of such Act as to State funds. The amount apportioned to any State under this paragraph may be used to match the regular annual Federal-aid apportionments made to such State (including the one for the fiscal year ending June 30, 1933), and when so used such amount shall be available for expenditure in paying the share of such State in the cost of Federal-aid projects. No amounts apportioned under this paragraph shall be advanced except for work on the Federal-aid highway system performed before July 1, 1933:

Provided, That the amounts so advanced shall be reimbursed to the Federal Government over a period of ten years, commencing with the fiscal year 1938, by making annual deductions from regular apportionments made from future authorizations for carrying out the provisions of such Act, as amended and supplemented:

Provided further, That all contracts involving the expenditure of such amounts shall contain provisions establishing minimum rates of wages, to be predetermined by the State highway department, which contractors shall pay to skilled and unskilled labor, and such minimum rates shall be stated in the invitation for bids and shall be included in proposals or bids for the work: *And provided further*, That in the expenditure of such amounts, the limitations in the Federal Highway Act, as amended and supplemented, upon highway construction, reconstruction, and bridges within municipalities and upon payments per mile which may be made from Federal funds, shall not apply. As used in this paragraph, the term "State" includes the Territory of Hawaii. The term "highway," as defined in the Federal Highway Act, approved November 9, 1931, as amended and supplemented, for the purposes of this paragraph only, shall be deemed to include such main State parkways as may be designated by the State and approved by the Secretary of Agriculture as part of the Federal-aid highway system.

(2) For expenditure in emergency construction during the fiscal year ending June 30, 1933, $16,000,000, as follows:

(A) For the construction and improvement of national-forest highways, $5,000,000;

(B) For the construction and maintenance of roads, trails, bridges, fire lanes, and so forth, including the same objects specified in the paragraph commencing with the words "Improvements of the national forests" under the heading "National Forest Administration" in the Agricultural Appropriation Act for the fiscal year ending June 30, 1932, approved February 23, 1931 (46 Stat. 1242), $5,000,000;

(C) For the construction, reconstruction, and improvement of roads and trails, inclusive of necessary bridges, in the national parks and national monuments under the jurisdiction of the Department of the Interior, including areas to be established as national parks authorized under the Act of May 22, 1926 (U. S. C., Supp. V, title 16, secs. 403 to 403c), and under the Act of May 25, 1926 (U. S. C., Supp. V, title 16, secs. 404 to 404c), and national park and monument approach roads authorized by the Act of January 31, 1931 (46 Stat. 1053), as amended, or any one section of such roads of not less than eight miles, which crosses lands wholly or to the extent of 90 per centum owned by the Government of the United States, $3,000,000;

(D) For construction and improvement of Indian reservation roads under the provisions of the Act approved May 26, 1928 (U. S. C., Supp. V, title 25, sec. 318a), $1,000,000; and

(E) For the survey, construction, reconstruction, and maintenance of main roads through unappropriated or unreserved public lands, nontaxable Indian lands, or other Federal reservations other than the forest reservations, under the provisions of section 3 of the Federal Highway Act, as amended and supplemented (U. S. C., Supp. V, title 23, secs. 3 and 3a), $2,000,000. The Secretary of Agriculture and the Secretary of the Interior, respectively, are authorized to make rules and regulations for carrying out the foregoing provisions of this section with a view to providing the maximum employment of local labor consistent with reasonable economy of construction.

(3) For the prosecution of river and harbor projects heretofore authorized, $30,000,000.

(4) For the prosecution of flood-control projects heretofore authorized, $15,500,000.

(5) For the continuation of construction of the Hoover Dam and incidental works, as authorized by the Boulder Canyon Project Act, approved December 21, 1928 (U. S. C., Supp. V, title 43, ch. 12A), $10,000,000.

(6) For expenditure by the Department of Commerce for air-navigation facilities, including equipment, $500,000.

(7) For constructing or purchasing and equipping lighthouse tenders and light vessels for the Lighthouse Service as may be specifically approved by the Secretary of Commerce, $950,000, and for establishing and improving aids to navigation and other works as may be specifically approved by the Secretary of Commerce, $2,860,000.

(8) For the engineering work of the Coast and Geodetic Survey, Department of Commerce, heretofore authorized, $1,250,000.

(9) For the construction of projects included in the report of the Federal Employment Stabilization Board, laid before the Senate January 25, 1932, which have heretofore been authorized or which do not require specific authorization, under the Bureau of Yards and Docks, Navy Department, $10,000,000, of which not to exceed $300,000 shall be available for the employment of classified personal services in the Bureau of Yards and Docks and in the field service to be engaged upon such work and to be in addition to employees otherwise provided for.

(10) For emergency construction of public building projects outside the District of Columbia (including the acquisition, where necessary, by purchase, condemnation or otherwise, of sites and additional land for such buildings, the demolition of old buildings where necessary, and the construction, remodeling, or extension of buildings), such projects to be selected by the Secretary of the Treasury and the Postmaster General from the public building projects specified in House Document Numbered 788, Seventy-first Congress, third session, $100,000,000. Such projects shall be carried out within the limits of cost specified in such document (except as modified by law), and in selecting such projects preference shall be given to places where Government facilities are housed in rented buildings under leases which will expire on or before July 1, 1934, or which may be terminated on or prior to that date by the Government.

(11) For the construction and installation at military posts of such buildings and utilities and appurtenances thereto as may be necessary, $15,164,000.

[There follows in the Act a long list of improvements authorized at military posts throughout the United States.]

Sec. 303. No money shall be available for expenditure under this title in connection with a project in the District of Columbia, except as provided in section 301 (a), (11) or 302.

Sec. 304. The last paragraph of section 6 of the Federal Highway Act, approved November 9, 1921, as amended and supplemented (U. S. C., title 23, sec. 6), is hereby amended to read as follows:

"Whenever provision has been made by any State for the completion and maintenance of 90 per centum of its system of primary or interstate and secondary or intercounty highways equal to 7 per centum of the total mileage of such State, as required by this Act, said State through its State highway department, by and with the approval of the Secretary of Agriculture, is hereby authorized to increase the mileage of the primary or interstate and secondary or intercounty systems by additional mileage equal to not more than 1 per centum of said total mileage of such State, and thereafter to make like increases in the mileage of said systems whenever provision has been made for the completion and maintenance of 90 per centum of the mileage of said systems previously authorized in accordance herewith."

Sec. 305 [This section specifies the conditions under which any land or site may be acquired for the purposes of section 301 (a) (10).]

Sec. 306. In the construction of post offices and of buildings for post offices and other offices provided for in section 301 (a) (10), the Secretary of the Treasury with the cooperation of the Postmaster General may use such standard plans (heretofore or hereafter prepared) as may be most adaptable to the particular building to be constructed.

Sec. 307. All contracts let for construction projects pursuant to this title shall be subject to the conditions that no convict labor shall be directly employed on any such project, and that (except in executive, administrative, and supervisory positions), so far as practicable, no individual directly employed on any such project shall be permitted to work more than thirty hours in any week, and that in the employment of labor in connection with any such project, preference shall be given, where they are qualified, to ex-service men with dependents.

Sec. 308. For each fiscal year beginning with the fiscal year 1934, there is authorized to be appropriated, for the purposes of the sinking fund provided in section 6 of the Victory Liberty Loan Act, as amended, in addition to amounts otherwise appropriated, an amount equal to 2½ per centum of the aggregate amount of the expenditures made, out of appropriations made or authorized in this title, on or after the date of the enactment of this Act and on or before the last day of the fiscal year for which the appropriation is made.

The Home Loan Bank Act

AID to the building and ownership of individual homes—as contrasted with the large-scale operations under the Emergency Relief and Construction Act—will result from another new Federal law. This is the Home Loan Bank Act, signed by President Hoover on July 22. To quote the President's statement of that day:

"Its purpose is to establish a series of discount banks for home mortgages, performing a function for home owners somewhat similar to that performed in the commercial field by the Federal Reserve banks through their discount facilities.

"There are to be eight to twelve such banks established in different parts of the country with a total capital of $125,000,000 to be initially subscribed by the Reconstruction Finance Corporation.

"Building and loan associations, savings banks, insurance companies, etc., are to be eligible for membership in the system. Member institutions are required to subscribe for stock of the home loan banks and to absorb gradually the capital, and they may borrow from the banks upon their notes to be secured by the collateral of sound home mortgages. . . .

"The purpose of the system is both to meet the present emergency and to build up home ownership on more favorable terms that exist today. . . ."

Federal Aid Now Offered for Low-Cost Housing and Slum-Clearance Projects

A PROVISION of the new Emergency Relief and Construction Act of 1932 which has great possibilities for stimulating the construction industry and for improving the housing conditions of low-income groups in cities and towns throughout the United States is Subsection (A) (2) of Section 201. Under this the Reconstruction Finance Corporation is authorized and empowered—

"To make loans to corporations formed wholly for the purpose of providing housing for families of low income, or for reconstruction of slum areas, which are regulated by state or municipal law as to rents, charges, capital structure, rate of return, and areas and methods of operation, to aid in financing projects undertaken by such corporations which are self-liquidating in character."

George Gove, Secretary of the State Board of Housing of New York, who was one of the most vigorous proponents of this feature of the new law, is now actively at work to secure a large slice of the available funds for projects in New York City. In an interview in *The New York Times* of July 23, Mr. Gove said:

"Plans and preliminary applications for model housing work now in our hands would involve an expenditure of about $100,000,000 here. These applications indicate the widespread interest being taken in better housing and show that equity money is available. All that is needed now is the building mortgage money, and it appears likely that we shall put our approval on about $50,000,000 of this work for loans from the Reconstruction Finance Corporation.

"We hope to 'earmark' about that much money and have it for use soon after the machinery for this new type of loan is set up in Washington. Later, of course, more probably will be advanced for work in this state and in other sections of the country as soon as they have qualified."

To assist other states and municipalities in complying with the very proper safeguards which Congress set up in the subsection of the Act above quoted, a Sub-Committee on Housing Laws of the Committee on Economics of Site Planning and Housing, of the American Institute of Architects, prepared the following draft of the principles which it is recommended should be embodied in a state housing law.

Since New York had the longest experience with the actual workings of a State Board of Housing, the Committee drew largely on that experience and was fortunate in securing for the Committee's work the leadership of Carl Stern, Counsel, and George Gove, Secretary of the New York Board. The other members of the Committee were Clarence S. Stein, A.I.A., former Commissioner of Housing and Regional Planning, New York State, Dr. Carol Aronovici, city planner, and Robert D. Kohn, Past-President, A.I.A., and Chairman, Construction League of the U. S.

Principles to Be Embodied in a Housing Law

GENERAL

THE purpose of the law is to obtain substantial housing, at the lowest possible rentals, planned, constructed, financed and operated by public utility housing corporations under state regulation.

The low rentals are secured by: efficiency of design; prevention of excessive land costs; large-scale building operations; elimination of waste; reduction of financing charges; exclusion of speculative profits; and regulation of overhead expenses.

Sound values, sanitary construction and adaptation to environment are secured by the requirement for the approval, supervision and control of a State Commission as to the plans, specifications, construction, financial set-up and operation of the projects.

THE COMMISSION OF HOUSING AND PLANNING

Structure

There should be not over nine members.

The members should serve without pay, but should be entitled to their expenses, including a limited amount of travel outside of the state to obtain familiarity with existing projects.

The terms of the members should overlap.

The terms should preferably be not less than five years.

The membership should include an architect, an engineer with building experience, a person interested in the financing of public and private construction, a person experienced in social service, having a knowledge of housing conditions, and a representative of organized labor.

Technical Staff

The technical staff should include:

1. A director familiar with housing and community planning
2. A statistician
3. A supervising architect to pass on plans and supervise construction
4. Accountants
5. An experienced counsel
6. Clerical staff

3, 4, 5, may be employed on a part-time basis or on a per diem basis when needed. It may be sound policy to charge against the respective projects an inspection and supervision fee

The Commission, including counsel, should be independent of other state departments.

Functions

The investigation of housing needs and conditions, and the distribution of population in relation to location of industry throughout the state.

Devising of ways and means of improving housing and housing conditions and of securing economies in construction.

The replanning and replacement of areas that are a social or economic liability to the community.

The collection and dissemination of information relating to housing and, specifically, the education of the public with reference to sound housing and planning standards.

Cooperation with local housing, city planning and zoning boards.

The promotion of low-cost housing projects. The passing upon the applications to construct such projects submitted by public utility (limited-dividend) housing corporations. The supervision and regulation of the construction and operation of such projects, including:

1. Passing upon architectural, engineering and site plans
2. Consideration of financial structure and feasibility of the project
3. Supervision of construction of buildings
4. Supervision of operation, management, and of operating expenses
5. Fixing of rents

Powers

The Commission should have full powers of investigation, inspection and examination, including the power to subpoena and require the attendance of witnesses and the production of papers.

The Commission should be authorized to exercise these powers through a single member or the executive officer of the Commission.

The Commission will be specifically empowered to do everything necessary to enable it to carry out the functions heretofore described in connection with the approval and operation of projects, including the right to issue orders and make rules and regulations and enforce obedience thereto by application to the courts.

HOUSING PROJECTS

*General**

All housing projects should be large-scale developments and preferably forming a complete integrated neighborhood community with adequate recreational areas.

They may be for groups of single-family houses or multi-family dwellings, or both.

In order to facilitate control, they should be rental and not sale projects. Tenant ownership may be achieved by the ownership of stock in the housing corporation.

The projects must conform to proper standards with regard to land coverage, light and air, and suitable and efficient construction, and must conform to the general plan of the locality as a comprehensive neighborhood community.

The projects designed primarily for housing may benefit by permitting a strictly limited portion of the buildings or, in the case of a group of single-family houses, a strictly limited portion of the area, to be used for stores, offices, commercial, cooperative or professional purposes. (Under the New York Housing Law such uses are permitted on the ground floor and below and on the roof.)

The rentals for the commercial portions may be fixed on the basis of current market rates, enabling thereby a corresponding reduction in the rentals applying to residential use.

Rentals

The law should specify an *average* maximum rental. An *average* rental is suggested because certain apartments must of necessity be more desirable than others.

The exact rent schedule within the maximum specified by the law should be fixed in each instance with the approval of the Commission.

The maximum rental may be higher in certain locations than in others. It may be deemed advisable to vest in the Commission the power to fix higher maximum rentals in congested areas where it may be desirable to operate but where land costs are higher than in outlying areas.

(The rental basis adopted under the New York State Housing Law is a maximum average per room per month.)

Any excess earnings, after expenses, amortization, proper reserves, dividends and a reasonable transfer to surplus, should be used to reduce rentals.

Financial Structure

There should be a minimum requirement with respect to the amount of equity represented by stock of the corporation.

* See comment by Dr. Edith Elmer Wood, on page 83 of this issue.

Mortgages on a sufficiently conservative basis may be made legal for savings banks, insurance companies and trust funds.

Returns should be limited:

(a) The interest charges on senior financing should be limited to 5 per cent or 6 per cent.

(b) The rate of return to the stockholders should be limited to the amount fixed in the certificate of incorporation—not more than 6 per cent, and the dividends should be made cumulative.*

(c) Overhead, supervision and financial charges should be subject to the approval of the Commission and reduced to a minimum. To this end arrangements should be made for the disclosure of any possible affiliation of companies making contracts with the housing corporation.

(d) If there is a liquidation of the housing corporation or if the corporation is permitted by the Board to sell its property to a purchaser other than a public utility housing corporation, any surplus over a return to the stockholders of their investment plus the limited dividend should be divided between the state and the municipality.

Selection of Tenants

Provision should be made under the regulations of the Commission, so that the tenants are selected from families with modest incomes. This requires investigation of the applicants.

Land Costs

Speculative profits on the land are avoided and excessive land costs checked by requiring the appraisal of the Commission, and in addition, by conferring the power of eminent domain after the issuance by the Commission of a certificate of necessity. (See further discussion of eminent domain.)

Use of City Lands†

Provision may be made for the lease or sale of lands not needed for municipal purposes to public utility housing corporations.

Where lands are leased to housing corporations, the buildings should become the property of the city subject to the provisions of the lease. The city should be empowered to permit the corporation, under due safeguards, to mortgage the land and buildings in order to obtain financing on a conservative basis.

To safeguard the city, there should be the right of recapture at all times on the payment of a sum sufficient to retire the investment at the then amortized cost plus 6 per cent and the expenses of liquidation. All profits in liquidation or sale, over and above the return of the investment plus 6 per cent, should go to the city.

PUBLIC UTILITY HOUSING COMPANIES

These corporations may not be organized, except with the approval of the Commission in connection with a project approved by the Commission. Their directorate must include a member appointed by the Commission.

They must at all times act subject to the law and regulations and orders of the Commission.

The stockholders may not earn more than the limited dividend specified in the certificate of incorporation.

Any surplus on the sale or dissolution of the corporation after repayment to the stockholders of their investment plus the authorized dividend and any accumulations thereof should be divided between the state and municipality.

The companies may not sell or lease their properties except with the approval of the Commission and subject to the regulations imposed by the Commission, nor may they dissolve or be reorganized without such approval.

The company's salaries and overhead expenses, its contracts, obligations and securities are subject to the control of the Commission.

COOPERATION WITH LOCALITIES

Arrangements consistent with the administrative law of the particular state should be made for the cooperation of the State Board with localities, so that the projects may be worked out with due regard for street openings and closings, alteration of the city plan, establishment of schools and kindergartens, maintenance of parks or playgrounds and day nurseries.

EMINENT DOMAIN

The companies should be invested with the power of eminent domain where the Commission certifies to the necessity thereof.

It may be deemed advisable to have the power exercised for the housing corporation by the municipality in which the project is situated upon suitable indemnification by the housing corporation.

Unless the law of the state otherwise provides, the eminent domain powers should permit the immediate taking possession of the property upon payment into court of a sum deemed sufficient by the court to cover a possible award, or in the alternative, if consistent with the provisions of the state law, by the filing of an appropriate bond.

NOTE: The foregoing is sufficient in relation to housing projects. For slum-clearance projects, where it may be desirable to use part of the cleared areas for housing and part for other purposes, legislation should permit the condemnation of areas which are largely unsanitary, for replanning.

STATE OR MUNICIPAL ASSISTANCE

The effectiveness of legislation of this type is largely dependent on the character and extent of assistance offered by the state or municipality. The state or municipality may offer one or both of the following inducements in an effort to attain the lowest possible rentals in housing projects:

1. Use of government credit at approximately the same rate of interest paid by the state or the municipality plus cost of operation of the fund.

2. Tax exemption in various forms. (In at least one state consideration is being given to exemption from capital stock tax for limited dividend housing corporations.)

In other countries public moneys are made available for low-cost housing.

New York State does not offer any direct subsidy, nor does it authorize the use of public funds or credit for housing.

In New York, under the State Housing Law, there is granted exemption from various state taxes, e.g., franchises, organization, income, mortgage recording and other taxes and fees to the state or its officers, and municipalities are authorized to exempt from local taxation.

Under this authorization, New York City has exempted buildings, but not the land, from taxation, for a period of twenty years.

The value and effect of tax exemption on improvements is discussed in the 1932 annual report of the State Board of Housing.

THE DRAFTING OF THE LAW

Many of the features referred to in this outline are embodied in the New York State Housing Law, to which reference may be of value in the actual drafting of the law.

The law should contain findings of the legislature as to the reasons for its adoption, similar to that incorporated in the New York State Housing Law. These findings are of importance in the statutory and constitutional interpretation of any law.

* EDITORIAL NOTE.—*This restriction seems sound, if the corporation is granted tax exemption on its buildings. Without tax exemption, however,* THE AMERICAN CITY *does not see the necessity for limiting dividends. Many business groups would probably be willing to undertake slum clearance and large-scale housing enterprises with a chance of higher return than 6 per cent, who would not be interested in a somewhat speculative undertaking with a 6 per cent limit.*

As a possible solution of this problem and as a means of preventing too high payments for land, the idea might be tried out in some states of loaning public funds at a low rate of interest in sufficient amounts to cover the entire construction cost of an approved housing project, with the condition that the corporation to which such funds are loaned would be authorized to secure from the regular lending companies a first mortgage on its land in an amount not exceeding one-half the previous assessed valuation of the land (or of the land and buildings to be torn down), and that the corporation would issue common stock to cover the other half—or as much more as might be necessary for attractive capitalization of the corporation; this common stock to be subordinate to the loan of governmental funds, which would be protected by a bond and by a second mortgage on the entire property. Under such a plan as this, the corporation could make a profit only after amortizing the public funds loaned to it, and when this was done the corporation would have the privilege of earning more than 6 per cent on its investment.

The most serious handicap to slum clearance is the high value which owners of such property place on their land and buildings. Under the scheme here proposed there would be no great disadvantage in this high valuation, since the owners could profit by it only through economical construction and efficient management of the new buildings to be erected.

† EDITORIAL NOTE.—THE AMERICAN CITY *doubts the wisdom of the suggestion that private corporations be given the right to mortgage the fee of city lands. A provision to that effect was approved by the New York State Legislature in 1931, but it is feared that the general adoption of such legislation might lead to abuses not justified by the benefits to be secured.*

A Comment by the Author of "Recent Trends in American Housing"

To the Editor of THE AMERICAN CITY:

The "Principles Which It Is Recommended Should Be Embodied in a State Housing Law" seem to me, in general, to be admirably conceived and expressed. My only suggestions are as follows:

1. (And most important) The limitation of approved projects to large-scale neighborhood developments on a rental basis seems to me unfortunate. It would rule out the formation of rural housing companies which might operate on a county basis (say) with great usefulness. It would be unacceptable to that large fraction of the country in which home ownership is still the custom and aim. The successful experience of the Veterans' Welfare Board of California in promoting home ownership, with better housing standards, lower costs and greater security, on a state-wide individual house-and-lot basis, suggests the possibility of extensive developments in a similar field, substituting Federal loans for the California bond issues. The point of view of the framers of the Principles seems to have been exclusively urban.

2. Under "Selection of Tenants," I wonder if it might not be worth while to emphasize a little more the need of such methods of tenant selection as will rule out competition between public utility housing and the housing produced by speculative builders? This will be of increasing importance as public utility housing grows in volume.

3. The note on Slum Clearance seems inadequate. Should not a state housing law contain the enabling provision which would make it possible for a municipality to acquire a slum or blighted area for demolition and replanning? The idea may be implicit in the note, but should it not be made explicit?

EDITH ELMER WOOD.

Teachers College, Columbia University,
New York, July 27, 1932.

Housing Reports Now Available

Five of the eleven volumes of the final reports of committees of the President's Conference on Home Building and Home Ownership have now been published. For descriptive circulars apply to James Ford, Editor, Room 7868, New Commerce Building, Washington, D. C.

Assessment Record-Keeping in Johnstown, Pa.

By MICHAEL M. CHUDY
City Assessor

MUCH favorable comment has been evinced by many municipal and corporation officials as to the system of keeping records in the Bureau of Assessments in Johnstown, a Pennsylvania third-class city.

The law pertaining to the making of assessments in Pennsylvania provides that the assessor shall assess property at what he thinks the property would bring at a fair advertised sale. The system of assessing used in Johnstown is somewhat similar to the Somers system. The latter system, as was found after a fair trial, could not be used in its entirety because of the topography of the city. It was found that the land values in the central part of the city could be figured very closely by the Somers system for several blocks, but then such a sudden drop in values was found in the succeeding blocks that the ciy was compelled to use its own system.

In Johnstown it is required by law that any deed transfer made in the city be recorded with the city engineer, and that the city engineer give a copy of all such transfers to the assessor, thus enabling him to have as nearly correct a record of ownership as is possible. The engineer also provides the assessor with maps of all land in the city. The maps are laid out in blocks, showing every parcel of ground, its dimensions and ownership. A separate book of maps is made for each ward. They are loose-leaf bound, and every three years new sets are made with any changes in ownership or subdivision shown thereon.

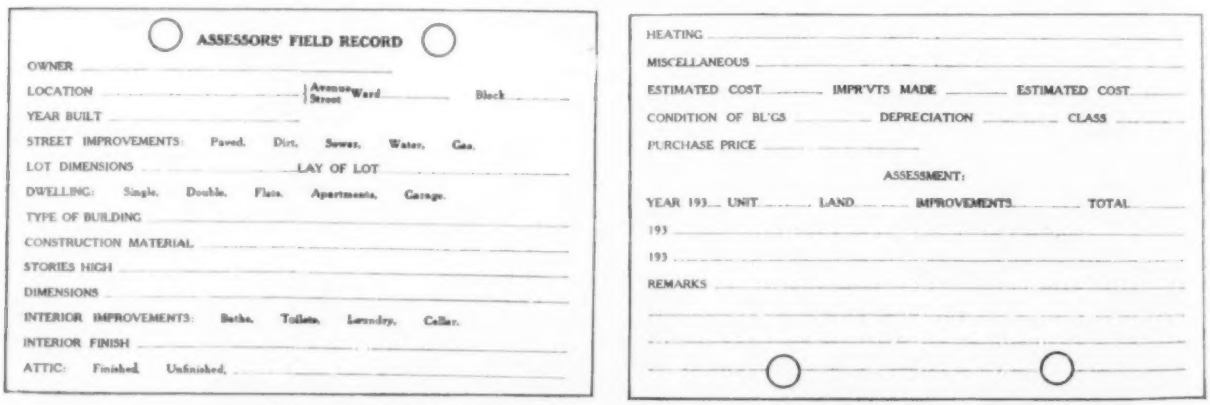
The assessor has a separate field book for each ward. A new set of books is made every three years. In these books a record of ownership is put down in geographical order, by blocks. First the number of the block to correspond with the map is placed in the book, then the name of the owner; the house number; street; deed lot number; number of buildings; number of lots; ground dimensions; kind of building; size of building; improvements; value of land; aggregate amount; purchase price; and general remarks. The records in these field books are put down in pencil.

The assessor also has a card-index field record, which is filed in street order by wards. These cards contain a description of all improvements in detail for any particular property. This card system is aiding the assessor greatly in ascertaining that no discrimination or inequality creeps into any of the assessments.

For office record the assessor has a card-index system which is filed in alphabetical order. Thus, no matter whether any one interested knows the name of the owner or just the location, he can be given whatever information he desires in very little time. From these cards the records are taken for the tax books. Four copies are made of these in one typing operation, two sheets for the city, and two for school purposes. The records on these sheets are checked by the assessor and his staff, and the amount of the city tax is computed by the city clerk. After all this is done the city tax book is turned over to the city treasurer, and one is kept by the assessor. The two school tax books are sent to the school-board, where the school taxes are computed. The books are then sent to the city treasurer, who collects both city and school taxes.

Particular attention is called to four features in the system of keeping records in Johnstown: the deed transfers; the maps; the assessor's card-index record; and an annual compilation which shows assessment and tax data by wards, giving the number of assessment items, occupation valuations* for men and for women, property valuations, total valuations, personal taxes for men and for women, property taxes and total taxes.

* In Johnstown [as elsewhere in Pennsylvania —Ed.] we assess all persons over 21 years of age for occupational taxes; i.e., we have a schedule of valuations for each occupation and assess each person with his particular occupational valuation. Examples: laborer, $200; mechanic, $250, etc. This valuation is then multiplied by the millage to give the amount of tax due. The men are charged $1 poll tax besides the above amount; the women are not.


ASSESSORS' FIELD RECORD

OWNER

LOCATION — Avenue / Street — Ward — Block

YEAR BUILT

STREET IMPROVEMENTS: Paved. Dirt. Sewer. Water. Gas.

LOT DIMENSIONS — LAY OF LOT

DWELLING: Single. Double. Flats. Apartments. Garage.

TYPE OF BUILDING

CONSTRUCTION MATERIAL

STORIES HIGH

DIMENSIONS

INTERIOR IMPROVEMENTS: Baths. Toilets. Laundry. Cellar.

INTERIOR FINISH

ATTIC: Finished. Unfinished.

HEATING

MISCELLANEOUS

ESTIMATED COST — IMPR'VTS MADE — ESTIMATED COST

CONDITION OF BL'GS — DEPRECIATION — CLASS

PURCHASE PRICE

ASSESSMENT:

YEAR 193— UNIT — LAND — IMPROVEMENTS — TOTAL

193

193

REMARKS

FRONT AND BACK OF ASSESSOR'S FIELD RECORD CARD, JOHNSTOWN, PA.

A Golden Opportunity for Improving Government and Administration

By FRANK BANE
Director, American Public Welfare Association

THE administration of any plan of unemployment relief is going to be difficult, unnecessarily so because of the flood of propaganda that has been loosed over the country for the purpose of discrediting government. It used to be the vogue to contrast government with various private endeavors to the great discredit of government. That pastime is not so popular now—we have found that most of our idols had clay feet. Governments are being compelled to rush into the breach not only to feed the hungry but to feed the corporations, to feed the various industries, to feed the railroads, and to feed those citadels of business—the banks.

No one attempts to argue that government is all right. It is not contended that all of its means and methods are efficient. It is even admitted that upon occasion some governments are corrupt. It is contended, however, that government as a whole compares favorably with our other activities, and that regardless of its nature it is ours, it is what we make it, and what we as a whole desire it to be. It has seemed to me that our present difficulties might well offer a golden opportunity for some improvement in our

ideas of government and in its administration.

The primary problem of government, as of every other activity, is one of personnel. The need, the crying need, is for an increasing number of our very best citizens to engage in governmental activities as a profession. The complexities of modern government and the increasing technical demands made upon it by the body politic seem to me to necessitate a revision of our political thought. For generations we have believed, and we have taught our children to believe, that any American citizen was capable of filling any public office. Yes, even that he had an inherent right to expect public office without specific training and definite qualifications. Out of this idea has grown the practice prevalent in many sections of the country of "passing the job around." A public official, according to this theory, no matter how efficient, must not hold public office for more than one or two terms—he must get out and give the other boys a chance; and these other boys must, of necessity, learn the job at the expense of the taxpayers.

If we can secure a larger proportion of competent, trained officials in public office; if we can in some way provide for continuity of service, and if we can—I dare to mention it—provide for more adequate compensation for expert service well done, we can overcome to a great extent the growing criticism of government on the one hand and the increasing public inertia on the other. We could then, I hope, confidently attack the most important problem from the standpoint of the taxpayer that confronts modern government—simplification. Much work has been done along this line.

Much more needs to be done. With public officials specifically trained for various public offices, I believe we could eliminate many of the checks and balances with which many of our governments are cluttered. The total number of offices could be reduced, since it would no longer be as necessary to elect a second and a third man to see that the first man handles efficiently and honestly the job to which he has been elected or appointed. And I am confident we could reduce the number of political units, each of which must now be staffed with a given number of public officials.

—From an address on "Economy, Debts and the Dole" delivered by Mr. Bane before the Municipal Finance Officers Association of the United States and Canada, in Washington, D. C., June 8, 1932. The paper is published in full in the *Comptroller* for August, 1932.

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Garage—Consent Zoning

ILLINOIS.—*Koos v. Saunders*, Supreme Court, June 24, 1932.—Koos owned vacant property in a zoning district classified as local business, where gasoline filling stations are permitted subject to the consent of a majority of the owners of abutting property within 200 feet. He applied for a permit for such a station, which was refused solely because of the lack of such consents. His property was practically surrounded by public garages, auto sales rooms and gasoline service stations. *Held* that the requirement of consents subjected Koos in the lawful use of his property to the arbitrary will of neighboring property owners, uncontrolled by any rule or standard prescribed by legislative action, and was void.

Driveway

INDIANA.—*In re White*, 180 N. E. 873.—"Entrance" in an ordinance prohibiting a filling station unless at least 150 feet distant from "any entrance" to certain public grounds or buildings applies to a side entrance to a church reached by a driveway and walk used by a third or more of a large congregation.

Residential District—Undertaking Establishment

MARYLAND.—*Lewis v. Mayor and City Council of Baltimore*, reported in *Baltimore Daily Record*, June 25, 1932.—An undertaking establishment may lawfully be excluded from a residential district.

Board of Appeals—Discretion

MARYLAND.—*North Baltimore M. P. Church, Inc., v. The Board of Zoning Appeals*, reported in *Baltimore Daily Record*, June 24, 1932.—Application to use part of a building in a residence district as a delicatessen store, granted by the Board of Appeals. The ordinance gave the Board the power to grant permits in its discretion, within 100 feet of a boundary line between two use districts, for any use permitted in that one of such use districts which has the lower classification. *Held* that there was not a sufficient rule to guide the conduct of the Board; and that its action, being arbitrary, was illegal.

Non-Conforming Use

MASSACHUSETTS.—*Bianchi v. Commissioner of Public Buildings for City of Somerville*, 181 N. E. 120.—The permission in a zoning ordinance for the non-conforming use of previously erected buildings does not permit the removal of a tenement house of third-class construction into an inhabited district.

NEW JERSEY.—*Lamb, Mayor of Borough of Ho-Ho-Kus v. McKee*, 160 Atl. 563.—Before the passage of the zoning ordinance sand was being lawfully excavated in one acre, part of a ten-acre tract. The ordinance permitted the continuance of such a non-conforming use. *Held* that the use of the entire ten-acre tract for that purpose could therefore be lawfully continued.

Garage

NEW JERSEY.—*Dinkins v. Kip*, 160 Atl. 676.—Maintenance of a garage and gasoline serving station in connection with it in a residential zone is not a "nuisance per se."

Municipal ordinances will not be esforced by injunction unless the act complained of is a nuisance.

In accord, *Town of Montclair v. Kip* (New Jersey), 160 Atl. 677.

OKLAHOMA.—*Hensley v. Cities Service Oil Co.*, 58 Fed. 2d, 347.—Owners of residence property are not entitled under the circumstances of this case to an injunction against constructing a filling station on the opposite side of the street, to which the city's business section had reached.

NOTE BY EDITOR.—It does not appear, in this case, that the city has enacted a zoning ordinance; unless the ordinance, passed by the city, which required the written consent of 50 per cent of the owners of the real estate improved for residential purposes, and located within 300 feet of the property in respect to which the permit was sought, which should be filed with the City Clerk and approved by the City Council, were such an ordinance, or a part of it. In this case the nesessary consents were filed, and the application approved by the Council.

Open-Air Garage

NEW YORK.—*Seidman and Sons, Inc., v. Tilrose Camp Operating Co., Inc.*, Supreme Court, Queens County, reported in *New York Law Journal*, July 7, 1932.—This action is brought for an injunction restraining the defendants from operating an open-air parking space for more than five cars in a restricted district. The plaintiff is the owner of a licensed garage diagonally across the street from the premises of the defendants and its business curtailed by defendants' operation. The plaintiff is such an interested party as entitles it to prosecute this action. Injunction granted.

Planning Board—Membership

NEW YORK.—*Macrum v. Hawkins*, 235 App. Div. 370.—Membership in a board of supervisors and membership in a county planning commission are not incompatible. There is no inconsistency in the functions of the two boards.

Esthetics

The Institute of Land Economic has reprinted an article by Herbert S. Swan on "The Amenities in City Planning," which first appeared in the *Journal of Land and Public Utility Economics* for May, 1932.

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held liable for fall of billboard from top of building where defective condition had been discovered (Nebraska Supreme Court: *Gilbert v. Welch Restaurant Co.*, 240 N. W. 313).

City held not liable for injury to bicyclist on sidewalk caused by plant overhanging from abutting property (Alabama Supreme Court: *Hill v. Reaves*, 139 So. 263).

City held not liable for injury to pedestrian slipping on icy ridge on sidewalk, if safe passageway existed (Louisiana Court of Appeal, Second Circuit: *Pepper v. Southern Bell Telephone & Telegraph Co.*, 137 So. 610).

City held not liable for injury to pedestrian due to abrupt drop of sidewalk or curbing at private driveway across sidewalk (Massachusetts Supreme Judicial Court: *Gustat v. City of Everett*, 179 N. E. 217).

Advertising Cities

Home rule city held empowered to levy tax to advertise its resources (Texas Court of Civil Appeals: *City of San Antonio v. Paul Anderson Co.*, 41 S. W. 2d, 108).

Home rule city upheld in creating board of city development (Texas Court of Civil Appeals: *Bland v. City of Taylor*, 37 S. W. 2d, 291).

Annexation

Persons held not required to be voters within territory proposed to be annexed, under a statute referring to "inhabitants" (California District Court of Appeal: *People v. City of Los Angeles*, 3 Pac. 2d, 1032).

Appropriations

Salaries of municipal officers and employees held subject to review by board of estimates (Michigan Supreme Court: *Council of City of Saginaw v. Board of Estimate*, 239 N. W. 872).

Attorneys' Fees

Chief of police successfully resisting suit to enjoin enforcement of ordinance held entitled to attorney's fee, if city attorney acted for him and not for city (Mississippi Supreme Court: *Matheny v. Simmons*, 139 So. 172).

Business Regulations

Ordinance and statute prohibiting jewelry auction sales between certain hours upheld (Mississippi Supreme Court: *Matheny v. Simmons*, 139 So. 172).

City Clerks

City clerk held liable for loss resulting from false certificate showing no special assessments against realty (Minnesota Supreme Court: *Muiroy v. Wright*, 240 N. W. 116).

Condemnation Proceedings

Prior devotion of railroad property to public use held not to prevent condemnation in grade elimination proceeding (New York Supreme Court, Appellate Division, *In re Elimination of Highway-Railroad Crossing*, 254 N. Y. S. 578).

County Consolidation

Statute providing for consolidation of two counties upheld (Georgia Supreme Court: *Hines v. Etheridge*, 162 S. E. 113).

Finances

City held entitled to preference on insolvency of bank which received municipal funds without being designated city depository (Kansas City Court of Appeals: *City of Marysville v. Farmers' Trust Co.*, 45 S. W. 2d, 103).

Illegal note or bond held not validated by renewal or part payment.

Municipal notes issued for stock in silk mill held void as imposing taxes for private purpose (South Carolina Supreme Court: *Bolton v. Wharton*, 161 S. E. 454).

Fire Protection

Water company held not liable to private property owner for failing to supply sufficient water to extinguish fire, as required by contract with city (Georgia Court of Appeals: *Grann v. Coastal Public Service Co.*, 160 S. E. 807).

Municipal Bonds

Decree by default in bond validation proceeding held as binding as any other judgment by default (Mississippi Supreme Court: *Love v. Mayor & Board of Aldermen of Yazoo City*, 138 So. 600).

Officers' Compensation

County supervisor held entitled to statutory mileage although trips were made without actual expense (Iowa Supreme Court: *State v. Nauman*, 239 N. W. 93).

Police Ordinances

Ordinance prohibiting "disturbing" peace held not invalid as being indefinite (Louisiana Supreme Court: *Town of Ponchatoula v. Bates*, 138 So. 851).

Ordinance forbidding lewd women to appear in public places, and penalizing men accompanying them, held void (North Carolina Supreme Court: State *v. Ashe*, 161 S. E. 709).

Public Utilities

Application by one utility to purchase property of another properly considered in light of public interests that might detrimentally be affected if an excessive consideration were paid (Pennsylvania Superior Court: *Borough of Brookville v. Public Service Commission*, 157 Atl. 513).

Recall Charges

Accusation against municipal official in recall proceedings required to be as specific as criminal information (Washington Supreme Court: *State v. Houghton*, 4 Pac. 2d, 1110).

Removing Officers

Dismissal of police chief invalid where his guilt was determined at a private conference at which town attorney was present but from which the accused officer's counsel was excluded (New Jersey Supreme Court: *Rosecrans v. Town of Westfield*, 157 Atl. 146).

Sabbath

Distribution of metropolitan Sunday newspapers held excepted from Sunday labor law as "work of necessity" (Kansas Supreme Court: *State v. Needham*, 4 Pac. 2d, 464).

Special Assessments

City held powerless to assume special assessments levied for street improvement (United States District Court, Middle District of Alabama: *Brown-Crummer Investment Co. v. City of Florala*, 55 Fed. 2d, 238).

Streets

Establishment of a 20-foot boulevard in middle of residence street 120 feet wide held proper under general powers over streets (Minnesota Supreme Court: *Apitz v. City of New Ulm*, 241 N. W. 47).

Abutters on boulevard held entitled to enjoin widening of pavement (Michigan Supreme Court: *Meyer v. City of Detroit*, 241 N. W. 264).

Abutter held not entitled to damages for grading not involving change of established grade and not involving establishing unreasonable grade (Ohio Court of Appeals: *Cloyd v. City of Cuyahoga Falls*, 179 N. E. 516).

Tax Liens

City not empowered to ordain broader tax lien than provided by statute (United States District Court, Northern District of Texas: *In re Brannon*, 53 Fed. 2d, 401).

Tax Sales

Tax sale held void because not conducted on day required by law (Mississippi Supreme Court: *Johnson v. Lake*, 139 So. 455).

Water Supply

City is liable for flooding land in providing water supply (Oklahoma Supreme Court: *City of Wewoka v. Mainard*, 8 Pac. 2d, 676).

Workmen's Compensation

Employee of contractor held not entitled to award as employee of city (Virginia Supreme Court of Appeals: *City of Portsmouth v. Daniels*, 162 S. E. 324).

MUNICIPAL AND CIVIC PUBLICATIONS

Prices quoted do not include postage, unless so stated.

Town Planning

Recent Advances in Town Planning.—By Thomas Adams, Past President, Town Planning Institute (of Great Britain); Associate Professor of City Planning, Harvard University; in collaboration with F. Longstreth Thompson, E. Maxwell Fry, and James W. R. Adams. The Macmillan Company, London and New York. 1932. XVI + 400 *pp.* 2 *colored maps and* 87 *illustrations.* $5.50 *from* THE AMERICAN CITY.

Breadth of view of the meaning and scope of town and regional planning and zoning, and illuminating consideration of details of individual examples, characterize this study of "the art of shaping and guiding the physical growth of towns, and also of rural communities, in harmony with social and economic needs." So clear and interesting a general picture is given of the advances made in passing and carrying out planning legislation mainly in the United Kingdom but also in other countries, including the United States, that the reader's familiar mental confusion regarding this matter disappears. Not only what has been done in the planning of towns, but what should be done, and in what way, is developed in this volume, which becomes an authentic brief manual of technique in the chapter on Studies of Existing Conditions and Problems.

"It is the comprehension of the problems of a town or urban region in their totality, and not in the sense of separated problems, that presents the greatest difficulty in the art of planning and makes the biggest demand on the skill of the town planner." The comprehensive and flexible advisory regional plan is stated to be "a picture of opportunities" rather than "a working program for immediate execution"; the advisory town plan presents in greater detail the problems shown in the advisory regional plan, and should include tentative proposals on communications, zoning, open spaces, local development schemes and architectural features, and the preservation of amenities. Of particular interest is the section on the planning of new towns, because of the analysis of the conditions in each example that governed the degree of success attained.

Important material is contained in the discussion of the design of roads and street systems. The chapter on Open Spaces and Amenities provides a basis for a broad appeal to the interest of the lay reader. Housing is dealt with in connection with local development and site planning. Design in estate development, civic centers, waterfront developments, replanning in built areas, are treated at length. Transportation by water, rail and air, markets in relation to transportation, and public services as considered in town planning, are presented. There is a final consideration of current tendencies and future prospects in town planning, especially as to new legislation. An extensive bibliography is included.

Water Purification

Water Purification Control.—By Edward S. Hopkins, Principal Sanitary Chemist, Bureau of Water Supply, Baltimore, Md. The Williams & Wilkins Co., Baltimore, Md. 1932. 131 *pp.* $1.75 *from* THE AMERICAN CITY.

This concise, non-technical, practical handbook is valuable for the filtration plant operator. It covers in a simple, direct way such topics as coagulation, sedimentation, filtration, disinfection, tastes and odors, corrective treatment, and plant control data, and contains an appendix of useful tables.

Water Supply

The Division of Sanitary Engineering of the South Dakota State Board of Health has compiled a report on "Public Water Supplies of South Dakota—1932." Tables show the different kinds of water supplies, and information is given as to source of supply, methods of treatment, sanitary defects, etc. 47 pp., and a separate map. (Apply to the Board of Health, Waubay, S. Dak.)

Sewerage

Sewerage and Sewage Treatment.—By Harold E. Babbitt, M.S., M. Am. Soc. C. E., Professor of Sanitary Engineering, University of Illinois. 596 pp. John Wiley & Sons, Inc., New York. 1932. $5.00 *from* THE AMERICAN CITY.

The exhaustion of the third edition of this book gave Professor Babbitt the opportunity to completely revise the text for this fourth edition. Sewage treatment has changed much, even in the last four years, and the use of this book in the classroom has led to a demand for problems which are included in the Appendix. In this edition all information has been brought up to date and the chapters on activated sludge and sludge treatment have been completely rewritten. A chapter on industrial wastes, a most important present-day problem, has been added, and the chapter on pumping stations has been revised and condensed because of the availability of similar material in books devoted specifically to that subject. The book is divided into 24 chapters, which treat concretely of the manifold revisions of this important subject. Chapters 2-13 deal with sewers, chapters 14-20 with sewage and its treatment, chapter 21 with sludge, chapter 22 with miscellaneous minor processes of sewage treatment, chapter 23 with industrial wastes, and chapter 24 contains a comparison of the various processes of sewage treatment, giving comparisons as well as costs.

Traffic

The July number of *Public Roads* (Vol. 13, No. 5), the journal of highway research issued by the Bureau of Public Roads of the U. S. Department of Agriculture, consists of a 16-page illustrated article on "The Design of Street and Highway Intersections," by L. S. Tuttle and E. H. Holmes, Assistant Highway Economists of the Bureau. The paper deals with two classes of intersections—those where traffic volume necessitates regulation, and those where faulty design requires it. Considerable attention is given to traffic circles. Free to highway officials on request to the Department. (10c from the Superintendent of Documents, Washington, D. C.)

Taxation

Report No. 128 of the Detroit Bureau of Governmental Research, Inc., "An Analysis of Tax Delinquency," by Sidney G. Tickton, of the College of the City of Detroit, is a summary of a study made by Mr. Tickton last December "to discover what groups of taxpayers—analyzed by the amount of taxes each paid—were responsible for the present high tax delinquency, and also to find the effect of vacant parcels of property on total tax delinquency." 18 pp., mimeographed, plus several tables and charts. Free. (Apply to the Bureau, 936 First National Bank Bldg.)

Highways and Streets

Illustrated reports of the American Road Builders' Association on "Pavement Finance," "Traffic" and "Low-Cost Roads" have recently been issued. Bulletin No. 27, "Equipment for Construction and Maintenance of Low-Cost Road Surfaces," presents the findings of a survey of practice and trends in methods, plant and equipment, and is based on narrative descriptions and specifications received from 40 states, and catalogs from 38 manufacturers. 87 pp. Part I of Bulletin No. 32 is entitled "The Financing of City Pavements." Part II, "Traffic," includes sections on Interpretation of the Term "Right-of-Way," Building Safety and Facility into the Highway, Laning of Traffic, Modern Practice in Safety Zone Design and Use, Radii of Curbs at Intersections, and Control and Design of Multiple Intersections. 95 pp.

Section I of Bulletin No. 33, on "Streets," is Design and Construction of Concrete Pavement Bases. Section II contains (1) Control of Utility Cuts; (2) Low Cost Residential Streets; (3) Maintenance Materials and Methods as Practiced in Washington, D. C.; (4) The Repair and Reclamation of Asphalt Streets Using the Surface Heater Method. 53 pp. Free. (Apply to the Association, National Press Bldg., Washington.)

Municipal Utilities

The Management of Small Municipal Lighting Plants.—By Frederick L. Bird. Municipal Administration Service, 309 E. 34th St., New York. 1932. 145 *pp. Paper,* $1.00; *cloth,* $1.50.

Recent Technological Developments and the Municipally Owned Power Plant.—By Paul Jerome Raver, Assistant Professor of Public Utilities, Northwestern University School of Commerce. The Institute for Economic Research, 337 E. Chicago Ave., Chicago, Ill. 1932. 87 *pp. Paper,* $1.50.

These two booklets are among the most outstanding studies of municipal electric light and power plants that have appeared, and both have the merit of treating their subject matter without the prejudice, pro or con, frequently associated with it. Professor Raver's study represents a painstaking objective research into the effects which the development of improved methods of generation and transmission has had and is likely to have upon the number and size of municipal plants. The concluding chapter on "The Case for the Isolated Plant," indicates the approximate horsepower limits for various parts of the country and kinds of equipment above which municipal generation has continued to grow.

The booklet by Dr. Bird, Assistant Director of the Municipal Administration Service, covers a neglected phase both of the municipal ownership discussion and municipal administration generally, as it is concerned with the problems of management for the nearly 2,000 small communities having municipal electric systems, including "the appropriate administrative organization, the qualifications and functions of plant managers, financial and rate policies, accounting, auditing and reporting methods, unit costs of operation, successful business methods, the use of physical and financial data, and the advantages and limitations of state regulation." It is based very largely upon intensive study of the 51 municipal establishments in the state of New York, supplemented by Dr. Bird's broad knowledge of the subject in the country as a whole.

Two brief studies in the management and financing of municipal utilities have recently been issued by the League of Wisconsin Municipalities, 114 North Carroll Street, Madison, Wis. They are more particularly concerned with conditions as controlled by Wisconsin law. "The Management of Municipal Utilities in Wisconsin," 15 pp., mimeographed, 25c; "The Financing of Municipal Utilities in Wisconsin, 11 pp., 50c.

Public Works and Prosperity

Two pamphlets representing penetrating insight and bold thinking with regard to our economic maladjustments have recently appeared. David Cushman Coyle, a New York consulting engineer, under the title "Business vs. Finance—the Irrepressible Conflict," analyzes the difficulty as primarily caused by the investment of private surplus income in excess productive facilities, while consuming power is not correspondingly increased. This calls for the diversion of such surplus funds to non-competitive uses, with the tax system as the most effective means of doing so. As an immediate antidote to the depression, a vast public works program is recommended, to be financed chiefly by Federal bonds, which will be retired in better times through drastic income and inheritance taxes, thus creating employment, increasing general buying power, and avoiding the poison of excess productive capacity into which private surpluses would otherwise flow. Mr. Coyle's pamphlet, which originally appeared in shorter form in *Corporate Practice Review*, is available from the author, at 101 Park Ave., New York, for 50c. 44 pp.

Guy Mallon, Cincinnati lawyer, has written a pamphlet, "Can We Escape?", which deals with the problems of the depression largely from a monetary standpoint, and argues persuasively for a public works program based chiefly upon the highway plans for years ahead already prepared by the various states, this work to be financed by Federal bank notes secured by non-interest-bearing obligations of the states, to be retired over a ten-year period. 72 pp. 25c from the author, Union Central Bldg., Cincinnati, Ohio.

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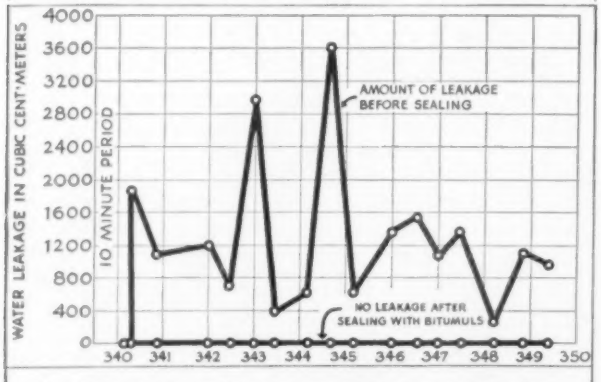

Showing results of permeability tests on a state highway. Top line shows the average water leakage in cubic centimeters, at intervals over a ten-mile section. Bottom line shows that there was no leakage, after a seal of .2 gallon of Bitumuls per square yard had been applied and covered with small screenings.

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Tree Protection

Insects and Diseases of Ornamental Trees and Shrubs.—By Ephraim Porter Felt, Director and Chief Entomologist, Bartlett Tree Research Laboratories; and W. Howard Rankin, Associate in Research in Plant Pathology, New York State Agricultural Experiment Station, Cornell University. The Macmillan Company, New York. 1932. XIX + 507 pp. Illustrated. $5.00 from THE AMERICAN CITY.

In this volume the authors have combined two books, written by them separately, in a completely rewritten, up-to-date reference work for practical, quick service to park and forestry superintendents, and all others, whether in public or in private, who are interested in, and responsible for, the care of trees and their protection from insects and disease. The arrangement of the extensive, detailed information furthers its intelligent use; Part I treats in Chapter I of insects and their depredations, in Chapter II of fungi and their depredations, in Chapter III of what to do about those troubles by using insecticides and fungicides, and in Chapter IV of root, body, branch, and leaf injuries and those from water relations, freezing, gas, smoke and electricity. Part II gives an alphabetical arrangement of trees and shrubs with accounts of the associated insects and fungi—from alder and apple to yew. Nearly 250 illustrations illuminate the text of this book, whose clear and attractive typography makes an instant appeal.

Inspectional Services

"The Administration of Regulatory Inspectional Services in American Cities" is the title of a paper-bound book of 184 papes, prepared by Edna Trull, and issued as Publication No. 27 of the Municipal Administration Service, 309 E. 34th Street, New York. Thirty-eight cities were used as a basis for study, and either were personally visited by the writer or underwent surveys at her request. The fields of inspection analyzed and presented are: health—administrative organization and personnel, standards and methods, volume and costs; plumbing; building safety—general and electrical; smoke abatement; fire prevention; weights and measures. Seventeen tables show a variety of data as to organization, personnel, salaries, costs and extent of work. The average city resident is quite unconscious of the convenience and security afforded him by regulatory inspection services. In this time of drastic cutting of expense, it is essential to determine how reorganization of administration, elimination of waste, and the use of efficient business methods, can preserve at justifiable cost to the municipality the health and safety of all those who have to do with cities. Recommendations to that end are made by the author of this constructive study. (Apply to the Service.)

Licenses

Publication No. 35 of the League of Minnesota Municipalities, "Licensing Peddlers, Hawkers, Solicitors and Transient Merchants," contains an article on the subject by Ambrose Fuller, Attorney, League of Minnesota Municipalities, as well as a suggested ordinance and list of license fees. 11 pp. (Apply to the League, 16 University Library, Minneapolis, Minn.)

Municipalities

The "Proceedings of the Twenty-Sixth Annual Convention of the Union of Nova Scotia Municipalities" contains addresses on "Municipal Affairs," "The Cost of Administration of Justice in Municipalities," "The Lucey System of Real Estate Valuation," "The Small Problems of Municipal Accounting," "Our Health Problems," "The Highways of Nova Scotia," and "Municipal Legislation of 1931." Regrettably, the volume has no table of contents. 107 pp. (Apply to the Secretary-Treasurer, Arthur Roberts, K. C., Bridgewater, N. S.)

Water Supply

"Quality of Water of the Colorado River in 1928-1930," by C. S. Howard, gives the results obtained in the continuation of a study of the Colorado River begun in 1925. It is published as Water-Supply Paper 638—D, Geological Survey, U. S. Department of the Interior, and represents pages 145-158 in "Contributions to the Hydrology of the United States, 1931." (Apply to the Supt. of Documents, Washington, D. C.)

Juvenile Delinquency

Juvenile Delinquency.—By Walter C. Reckless, Associate Professor of Sociology, Vanderbilt University; and Mapheus Smith, Assistant Professor of Sociology, University of Kansas. McGraw-Hill Book Co., Inc., New York. 1932. VIII + 412 pp. $3.50 from THE AMERICAN CITY.

The fact that a "juvenile delinquent" is a child that has been acted upon officially by police officers or court authorities is brought out early in this book. Such a child may be generically quite like one's own brother or sister who has never been caught and haled into court. The number of these recognized offenders, their physical and mental traits and their social conditions; how offenders are disposed of; their relations to the home and the school, the institutions, and the courts, furnish eight chapters of data and analysis. The case studies—exceedingly detailed—must, it is fair to assume, have value in proportion to their innumerable items and angles of observation. Readjustment by clinics and placements, prevention programs of group work—Y. M. C. A., Scouts, clubs of various kinds, organized play and athletics, are surveyed. The authors question the far-reaching preventive value of group work without concentration on individual cases. The comparative results of treatment in institutions, by probation, and in foster-homes, thus far observed, are shown to be inconclusive for any one type of treatment and any one type of offender. Crowded housing conditions are briefly mentioned as producing "in addition to other factors . . . . serious unadjustments leading to delinquency," but there is no presentation of facts showing the influence of modern improved housing in the lessening of juvenile delinquency.

A New Bridge Truss

The Wichert Truss.—By Dr. D. B. Steinman, Consulting Engineer, New York City, 1932. 138 pp. D. Van Nostrand Co., Inc., New York.

The Wichert Truss is a new form of truss invented and patented by E. W. Wichert, of Pittsburgh. Its characteristics are essentially those of the continuous truss. This truss by a unique arrangement and proper proportioning of members at the intermediate supports shows new properties which overcome certain limitations of applicability for the continuous truss and also offer new opportunities for economy in truss material. Dr. Steinman has prepared this book to acquaint engineers and engineering students with the features and methods of analysis of this new truss.

Motor Freight

The bulletin of the American Road Builders' Association on "Motor Freight" contains material presented at the Detroit convention of the Association on (1) Utility of the Highway; (2) Summary of 1931 Truck Legislation; (3) Coordination of Railway and Highway Transportation; (4) Highway Expansion and Vehicle Use Threatened by Tax Burdens; (5) Social and Industrial Economics of Motor Distribution; (6) Fifteen to Fifty Per Cent Saving on Tires; (7) Insurance; (8) Complete Monopoly of Transportation—The Purpose of the Railroads. 79 pp. (Apply to the Association, National Press Bldg., Washington, D. C.)

Tax Reduction

"Tax Reduction—Where and How to Start," by C. B. Cooke, Jr., and W. A. Van Hook, of Ford, Bacon & Davis, Inc., engineers, is the subject of a 7-page article published in reprint form. Graphs show the increase in the per capita costs of operation, maintenance and interest for the 14 largest cities in the United States since 1905. An outline of subjects covered by surveys to reduce local government costs is included. (Apply to Ford, Bacon & Davis, Inc., 39 Broadway, New York.)

Water Works

The "Proceedings of the Fourteenth Texas Water Works Short School," held at Mineral Wells, Texas, last January, under the joint auspices of the Texas State Department of Health and the Texas Section of the Southwest Water Works Association, contains a number of papers on the subject of water, in Section I, and on the subject of sewage, in Section II. 188 pp. $1.00. (Apply to Mrs. Pierson, Sec., Texas Public Health Assn., 110 E. 14th St., Austin, Texas.)

Prostitution Elimination

Prostitution and Its Repression in New York City, 1900-1931.—By Willoughby Cyrus Waterman, Ph.D., Instructor in Social Science, Brooklyn College of the City of New York. No. 352 of the Studies in History, Economics and Public Law edited by the Faculty of Political Science of Columbia University. Columbia University Press, New York. 1932. 164 pp. $3.00 from THE AMERICAN CITY.

This study concerns itself particularly with conditions in the borough of Manhattan and surveys the changes in the ways in which the law, the police and courts, and privately organized groups have dealt with prostitution during the last thirty years. Out of a confused condition of laws has come a standardized procedure through which every person involved in the practice or exploitation of prostitution is legally a vagrant and as such subject to the jurisdiction of the Magistrates' Courts, investigated by the Appellate Division in 1930 and 1931. The exceptional history of the Committee of Fourteen as here given is of great interest owing to the permanence of this body, its ability to work through, and cooperate with, the regularly constituted legal agencies, and "its measurably successful achievement of that which twenty years ago must have appeared to be the impossible task of breaking the institution of open commercialized prostitution in New York City." The work of other organizations against the exploitation of sexual vice is also clearly evaluated. The closing chapter presents the results of repression—conclusions determined with difficulty and admitted to be tentative rather than dogmatic. The principle evolved in this discussion of results is that "repression, to be effective, must be considered not as an end in itself but only as one element in a community-wide program of social betterment."

Land Valuation

The Los Angeles Bureau of Municipal Research has published as No. 1 of Studies in Land Valuation, Los Angeles County, California, "The Valuation of Business Lots in Downtown Los Angeles," by Cuthbert E. Reeves and the Bureau. The object of the study was to compare the present economic value of land in Los Angeles with the assessed value as of 1931-32 and to call attention to facts not ordinarily assembled. The first part of the report deals with the general problem of inflation, over-development, prospects of increased population and decentralization; the second part, an interpretation by Mr. Reeves, demonstrates the use of land value maps in establishing uniform land values for the assessment roll. 38 pp. $1.00. (Apply to the Bureau, 306 W. 3d St., Los Angeles, Calif.)

Traffic

The American Electric Railway Association has issued the "First Annual Supplement to A.E.R.A. Bulletin No. 355—Bibliography on Street and Highway Traffic." Bulletin No. 355 appeared in April, 1931. The supplement is divided into five sections: A.E.R.A. publications; regional surveys; general papers, reports, transactions and proceedings; periodical references; and an author index. 29 pp., mimeographed. (Apply to the Association, 292 Madison Ave., New York.)

Other Reports Received

ALLEGHENY COUNTY, PA.—Annual reports of Planning Commission, 1928, 1929, 1930, 1931. 31 pp.

CHICAGO, ILL.—Annual Report, The Commissioners of Lincoln Park, 1931. 57 pp.

CHICAGO, ILL.—Annual Report, Police Department, 1931. 64 pp.

DUBUQUE, IOWA.—Annual Report, Water Department, April 1, 1931-March 31, 1932. 56 pp.

ELIZABETH, N. J.—Annual Report, Police Department, 1931. 22 pp.

IRVINGTON, N. J.—Annual Report of the Municipal Accounts, 1931. 72 pp.

MARSHALL, MO.—Annual Report, Board of Public Works, 1931. 31 pp.

MONTCLAIR, N. J.—1931 Health Audit, Department of Health. 55 pp.

MOOSE JAW, SASK.—Financial Statement, 1931. 47 pp.

NEWARK, N. J.—Annual Report, Auditor of Accounts, 1931. 235 pp.

NEW YORK, N. Y.—Annual Report of the Chief Engineer of the Board of Estimate and Apportionment, 1930. 150 pp.

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CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

AUGUST 16-18.—SPENCER, IOWA.
League of Iowa Municipalities. Annual meeting. Secretary-Treasurer, Frank G. Pierce, Marshalltown, Iowa.

AUGUST 16-18.—POTTSVILLE, PA. (250)
League of Cities of the Third Class in Pennsylvania. Convention. Secretary, Byron C. Houck, City Clerk, Williamsport, Pa.

AUGUST 21-24.—NEW YORK. (400)
Association of American Cemetery Superintendents. Annual convention. Secretary, William B. Jones, Superintendent of Highwood Cemetery, Pittsburgh, Pa.

AUGUST 23-25.—UTICA, N. Y. (200)
New York State Association of Chiefs of Police. Annual convention. Secretary-Treasurer, James L. Hyatt, 503 Western Avenue, Albany, N. Y.

AUGUST 23-25.—KENTVILLE, N. S. (200)
Union of Nova Scotia Municipalities. Annual convention. Secretary, Hon. Arthur Roberts, Bridgewater, N. S.

AUGUST 26-27.—ROCHESTER, N. Y. (200)
National Shade Tree Conference. Annual convention. Secretary-Treasurer, Dr. Rush P. Marshall, Yale University, New Haven, Conn.

AUGUST 29-31.—TRAVERSE CITY, MICH.
Michigan Association of Chiefs of Police. Annual meeting. Secretary-Treasurer, Donald S. Leonard, 404 Commerce Building, Detroit, Mich.

AUGUST 31—SEPTEMBER 2.—TORONTO, ONT. (200)
Ontario Municipal Association. Annual meeting. Secretary-Treasurer, H. L. Brittain, 137 Wellington Street, W., Toronto, Ont.

SEPTEMBER 1-3.—COLORADO SPRINGS, COLO. (300)
State Association of Commercial Organizations of Colorado. Annual meeting. Secretary, Elmore Peterson, Extension Division, University of Colorado, Boulder, Colo.

SEPTEMBER 1-3.—FRENCH LICK, IND. (1,200)
United States Building and Loan League. Annual convention. Secretary, H. F. Cellarius, 12 East 12th Street, Cincinnati, Ohio.

SEPTEMBER 12-16.—COLUMBUS, OHIO. (400)
National Tax Association. Annual conference. Secretary, W. G. Query, Chairman, South Carolina Tax Commission, Columbia, S. C.

SEPTEMBER 13-16.—ST. LOUIS, MO.
International Association of Municipal Electricians. Annual convention. Secretary, W. H. Harth, Columbia, S. C.

SEPTEMBER 13-15.—BRADFORD, PA. (350)
Pennsylvania State Association of County Commissioners. Annual convention. Secretary, J. C. Dougherty, Harrisburg, Pa.

SEPTEMBER 14-16.—GARY, IND. (500)
Municipal League of Indiana. Annual convention. Executive Secretary, S. E. Spurgeon, Municipal League Review, Kokomo, Ind.

SEPTEMBER 14-16.—NEW YORK.
National Identification Association. Annual convention. Secretary-Treasurer, E. W. Livingston, Jamesville, N. Y.

SEPTEMBER 15-16.—ST. CLOUD, MINN. (75)
American Water Works Association—Minnesota Section. Annual meeting. Secretary-Treasurer, Ronald M. Finch, 240 South Fourth Street, Minneapolis, Minn.

SEPTEMBER 18, WEEK OF.—WASHINGTON, D. C.
Annual meetings. American Civic Association, Inc., Executive Secretary, Harlean James, Union Trust Building, Washington, D. C.; *American Institute of Park Executives and the American Park Society*, Executive Secretary, William H. Walker, 224 Wakewa Avenue, South Bend, Ind.; *American Association of Zoological Parks and Aquariums*, Secretary, Roger Conant, Toledo Zoological Park, Toledo, Ohio.
The National Conference on Government (listed below) will meet in conjunction with these organizations.

SEPTEMBER 18, WEEK OF.—WASHINGTON, D. C.
National Conference on Government, a combination of the annual meetings of the following organizations: *National Municipal League*, Secretary, Russell Forbes, 309 East 34th Street, New York; *Proportional Representation League*, Executive Secretary, George H. Hallett, Jr., 311 South Juniper Street, Philadelphia, Pa.; *National Association of Civic Secretaries*, Secretary, H. Marie Dermitt, Hotel William Penn, Pittsburgh, Pa.; *American Legislators' Association*, Director, Hon. Henry W. Toll, 850 East 58th Street, Chicago, Ill.

SEPTEMBER 19-21.—GRAND RAPIDS, MICH. (250)
International Association of Electrical Inspectors—Western Section. Annual meeting. Secretary, W. S. Boyd, 175 W. Jackson Blvd., Chicago, Ill.

SEPTEMBER 20-21.—SWAMPSCOTT, MASS. (300)
Massachusetts Police Association. Annual convention. Secretary, John H. Shaughnessy, West Newton, Mass.

SEPTEMBER 22-23.—ERIE, PA.
American Water Works Association—Central States Section. Annual convention. Secretary, B. J. Lechner, Water Department, Erie, Pa.

SEPTEMBER 26-28.—WASHINGTON, D. C. (100)
American Association of Engineers. Annual convention. Secretary, M. E. McIver, 8 South Michigan Avenue, Chicago, Ill.

SEPTEMBER 26-29.—SAN DIEGO, CALIF. (1,000)
California Conference on City Planning. League of California Municipalities. Joint meeting. Secretary of the Conference, C. J. S. Williamson, Chamber of Commerce Building, Los Angeles, Calif. Acting Secretary-Manager of the League, Gordon Whitnall, 1095 Market Street, San Francisco, Calif.

SEPTEMBER 26-27.—SAN DIEGO, CALIF. (100)
California Sewage Works Association. Annual convention. Secretary, Professor E. Reinke, Life Sciences Building, Berkeley, Calif.

SEPTEMBER 26—OCTOBER 1.—SWAMPSCOTT, MASS.
Illuminating Engineering Society. Annual convention. General Secretary, E. H. Hobbie, 29 West 39th Street, New York.

SEPTEMBER 27-30.—SPRINGFIELD, MASS.
New England Water Works Association. Annual convention. Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

SEPTEMBER 28—OCTOBER 1.—BALTIMORE, MD. (75)
Civil Service Assembly of the United States and Canada. Annual convention. Secretary, Fred Telford, 923 East 60th Street, Chicago, Ill.

SEPTEMBER 29—OCTOBER 1.—PITTSBURGH, PA. (150)
International Association of Public Works Officials. Annual convention. Secretary, A. M. Anderson, 100 North LaSalle Street, Chicago, Ill.

OCTOBER 3-7.—INDIANAPOLIS, IND. (750)
American Prison Association. Annual congress. General Secretary, E. R. Cass, 135 East 15th Street, New York.

OCTOBER 3-7.—WASHINGTON, D. C. (5,000)
National Safety Council. Annual congress. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 6-7.—ASBURY PARK, N. J. (500)
New Jersey State League of Municipalities. Annual convention. Executive Secretary, Barrett Crandell, 34 West State Street, Trenton, N. J.

OCTOBER 10-13.—FORT WORTH, TEXAS. (300)
Southwest Water Works Association. Annual convention. Secretary-Treasurer, Lewis A. Quigley, Fort Worth, Texas.

OCTOBER 11-12.—APPLETON, WIS. (100)
American Water Works Association—Wisconsin Section. Annual convention. Secretary, L. A. Smith, Supterintendent of Water Works, City Hall, Madison, Wis.

OCTOBER 12-13.—SULLIVAN, MO. (50)
League of Missouri Municipalities. Annual convention. Executive Secretary, J. W. Lumpp, 6801 Delmar Boulevard, University City, Mo.

OCTOBER 12-13.—BROKEN BOW, NEBR. (500)
League of Nebraska Municipalities. Annual convention and School for City Officials. Secretary-Treasurer, C. E. Beals, 407 East 12th Street Crete, Nebr.

OCTOBER 12-13.—OSHKOSH, WIS. (250)
Wisconsin Chiefs of Police Association. Annual meeting. Secretary, R. H. McCarty, Police Department, Kaukauna, Wis.

OCTOBER 17.—BRIDGEPORT, CONN.
New England Sewage Works Association. Fall meeting. Secretary, F. W. Gilcreas, 14 Beacon Street, Boston, Mass.

OCTOBER 18-21.—SAN DIEGO, CALIF. (800)
International Association of Fire Chiefs. Annual convention. Secretary, James J. Mulcahey, Yonkers, N. Y.

OCTOBER 19-21.—DETROIT, MICH. (175)
International Association of Dairy and Milk Inspectors. Annual meeting. Secretary-Treasurer, Dr. Paul B. Brooks, State Department of Health, Albany, N. Y.

OCTOBER 19-21.—LAWRENCE, KANS. (250)
League of Kansas Municipalities. Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.

OCTOBER 19-21.—ATLANTIC CITY, N. J. (300)
The Pennsylvania Water Works Association. Annual meeting. Secretary, F. S. Purviance, 327 Telegraph Building, Harrisburg, Pa.

OCTOBER 22-24.—WASHINGTON, D. C. (30)
Conference of State Sanitary Engineers. Annual meeting. Secretary-Treasurer, R. E. Tarbett, U. S. Public Health Service, Washington, D. C.

OCTOBER 23-26.—MEMPHIS, TENN.
National Association of Commercial Organization Secretaries. Annual convention. Manager, J. H. Hott, Chamber of Commerce, Fort Worth, Texas.

OCTOBER 24-27.—WASHINGTON, D. C.
American Public Health Association. Annual meeting. Acting Executive Secretary, Dr. Kendall Emerson, 450 Seventh Avenue, New York.

OCTOBER 24-26.—CINCINNATI, OHIO.
Joint Conference of the International City Managers' Association (Executive Director, Clarence E. Ridley, 923 East 60th Street, Chicago, Ill.) and the *Governmental Research Association* (Secretary-Treasurer, D. H. Smith, Institute for Government Research, 722 Jackson Place, Washington, D. C.)

OCTOBER 25-27.—SIOUX CITY, IOWA. (100)
American Water Works Association—Missouri Valley Section. Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

OCTOBER 26-29.—ST. PAUL, MINN. (1,500)
American Country Life Association. Conference. Executive Secretary, Benson Y. Landis, 105 East 22d Street, New York.

OCTOBER 31—NOVEMBER 2.—WINSTON-SALEM, N. C.
American Water Works Association—North Carolina Section. Annual meeting. Secretary, Professor H. G. Baity, Department of Sanitary and Municipal Engineering, University of North Carolina, Chapel Hill, N. C.

NOVEMBER 14-18.—WASHINGTON, D. C. (400)
American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 1222 National Press Building, Washington, D. C.

NOVEMBER 14-18.—NEW ORLEANS, LA. (200)
American Society of Municipal Engineers. Annual convention. Secretary, C. W. S. Sammelman, 4359 Lindell Boulevard, St. Louis, Missouri.

NOVEMBER 14-16.—PITTSBURGH, PA.
National Conference on City Planning. Annual meeting. Secretary, Flavel Shurtleff, 130 East 22d Street, New York.

DECEMBER 5, WEEK OF.—NEW ORLEANS, LA.
The Asphalt Institute. Annual Asphalt Paving Conference. Managing Director, J. E. Pennybacker, Crystal Building, 801 Second Avenue, New York.
Association of Asphalt Paving Technologists. Meeting in conjunction with the annual Asphalt Paving Conference. Secretary-Treasurer, C. A. Mullen, 980 Saint Antoine Street, Montreal, Quebec.

JUNE 12-16.—CHICAGO, ILL. (1,200)
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 29 West 39th Street, New York.

"SAY HELLO TO DADDY"

HE MAY be downtown at the office or a hundred miles away . . . yet that happy, eager voice wings across the wires, straight into his heart. It summons up a sudden, tender warmth. It sweeps away cares and worries. It brings sure, comforting knowledge that all is well at home.

Only a small voice, speaking into a telephone. But it can create a moment that colors the whole day.

If you stop to reflect, you will realize how immeasurably the telephone contributes to your family's happiness and welfare. It is a fleet courier . . . bearing messages of love, of friendship. A priceless helper . . . ready to aid in the task of running a household. A vigilant guardian . . . always at hand when emergencies arise.

Security, convenience, contact with all the world—these things the telephone brings to your home. You cannot measure their value in money. You cannot determine the ultimate worth of telephone service.

But consider, for a moment, that your telephone is one of a country-wide system of nineteen million others—a system of many million miles of wire served by hundreds of thousands of employees. Yet you pay only a few cents a day for residential use. And you enjoy the most nearly limitless service the world affords.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

BELL SYSTEM

When you write for that catalog, kindly mention THE AMERICAN CITY

NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Submachine Guns with Record Compensators for Police

Officers of the law and those on the side of law and order should be provided with superior means of protection of lives and property. Thompson submachine guns, which are light, short, handy, automatic weapons sold by Federal Laboratories, Inc., Pittsburgh, Pa., are used by police departments, state constabularies, sheriffs, penitentiary guards, express and armored car companies and banks. This gun is aimed from the shoulder and has a longer sight radius, giving it more accurate control than a pistol fired from the extended arm.

Semi-automatic fire is secured by the separate pressure of the trigger for each particular shot. Semi-automatically, one hundred single aimed shots can be placed in a target 30 x 30 inches square up to a range of 75 yards in 60 seconds. In case of dire emergency the full automatic feature of the Thompson submachine gun can be instantaneously secured by simply turning the lever. The gun will then fire like a machine gun and is easily controlled. Full automatically, fifty shots can be readily placed in a square 48 x 48 inches up to a range of 75 yards in 10 seconds. Full automatic fire is particularly effective against fast-moving or fleeting targets such as high-powered automobiles.

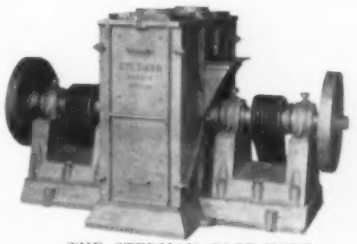
The tendency of the muzzle to rise in full automatic firing is practically nullified by the use of the recent invention known as the Cutts Compensator. Though recoil in Thompson guns is a negligible factor, the use of the Cutts Compensator reduces it to practically nothing.

The accompanying illustration shows a motorcycle side-car with a special mount for the Thompson gun. The gun can be instantly removed from the mount by the operator for such other uses as may be desired. It can also be fired effectively from side cars and automobiles without the special mount.

A THOMPSON SUBMACHINE GUN WITH A SPECIAL MOTORCYCLE SIDE-CAR MOUNTING

Making Sewage Sludge Salable by Grinding and Screening

A process for making sewage sludge into a salable product has been announced by Stedman's Foundry & Machine Works, Aurora, Ind. Most existing sewage disposal systems merely produce a solid and a liquid effluent, and the disposal of the solid matter is a problem, for there is seldom sufficient land area to allow for dumping the solids near the plant. For this reason Stedman's Foundry & Machine Works have spent many years developing special grinding and screening machinery to convert dried sewage sludge into a salable product, for which there is a growing demand. There is a drying expense, but this is considerably less if the drying, grinding and screening are considered in the original design of the plant. The sale of the ground and screened sludge will not only carry the drying, grinding and screening cost, but will also materially reduce the expense of operating the entire sewage disposal plant by eliminating the expense of disposing of the undried sludge.



THE STEDMAN CAGE TYPE DISINTEGRATOR

The grinding and screening of sewage sludge is not an ordinary job. Because of the abrasive action of the material, due to the presence of silica carried in by storm water, as well as the electrolitic and chemical action due to the presence of free acid, special alloy steels are used in the construction of Stedman equipment. Sewage disposal is a 24-hour operation and must be continuous, necessitating that machinery and equipment function with a minimum maintenance expense.

The suitability and practicability of Stedman equipment has been demonstrated by its use in Milwaukee, Indianapolis and Houston. The Stedman ball-bearing cage type disintegrator is used for grinding dried sludge. It will handle sticky material readily and has low maintenance cost. The Quadrex vibrating screen is simple in design and rigid in construction. It has a vibrating tray, thus insuring complete vibration of the entire unobstructed wire cloth. The vibration is so intense that it prevents blinding of the cloth. The motor as well as the vibratory mechanism is of ball-bearing construction. The Stedman bucket elevator is especially built for handling dry sludge. The design and construction were carefully selected for capacity, durability, rigidity, accessibility and dust-tight features.

Professors to Demonstrate Nuchar

J. Summie Whitener, Associate Professor of Sanitary Engineering, North Carolina State College, Raleigh, N. C., has joined the forces of the Industrial Chemical Sales Co., Inc., 230 Park Avenue, New York, for the summer to demonstrate Aqua Nuchar in North Carolina, South Carolina and Tennessee. Professor Whitener will visit all the plants in that territory in the interest of Aqua Nuchar, showing methods of application, dosages, and the advantages of the use of powdered activated carbon in eliminating tastes and odors from public water supplies. Similar work will be done by Professor H. B. Arrant of Simmons University at Abilene, Texas, throughout Texas, Louisiana and Oklahoma.

STOP
GERM-SPREADING

Many vital improvements have been made in drinking methods, but, heading the list, is the R-S Vertico-Slant Sanitary Fountain—an advantage which stops germ-spreading.

This fountain never feels the touch of contaminated mouths and lips. It prevents them from even coming close to the jet that spouts the water.

The Vertico-Slant with the water passing angularly from jet to mouth makes each drink a safe and sanitary one. Write for bulletin.

RUNDLE-SPENCE MFG. CO.
446 NO. FOURTH ST. MILWAUKEE, WIS.

RUNDLE-SPENCE

The Swimming Pool A Civic Responsibility

INFILCO PRODUCTS

Aerators
Automatic Boiler Blowdown
Basin Level Controllers
Chemical Proportioners
Clarifiers
Coagulant Feeders
Dechlorinators
Depth Gauges
Directional Flow Controllers
Disk Filters
Dry Chemical Feeders
Filtration Plants
Filter Underdrains
Flow Indicators
Gravity Filters
Hot-Flow Water Softeners
Hydraulic Valve Controls
Hydrodance Purifiers
Iron Removal Plants
Loss-of-Head Gauges
Lime-Soda Water Softeners
Lime Slakers and Feeders
Manometers
Orifice Feed Boxes
Oil Removal Filters
Proportioning Equipment
Pressure Filters
Recarbonating Equipment
Rate-of-Flow Controllers and Gauges
Sampling Tubes
Solenoid Operated 4-Way Valves
Steam and Gas Purifiers
Strainers and Distributing Nozzles
Swimming Pool Filters and Equipment
Sterilizers
Taste and Odor Removal Plants
Venturi Tubes and Infilco Meters
Water Stills
Wet Cat Chemical Feeders
Zeolite Water Softeners

Clean - Clear - Safe Water

PUBLIC confidence in the safety of the modern pool is the reason for the marvelous increase and popularity of swimming. To maintain that confidence **clean, clear, safe** water has become a matter of civic responsibility.

Internatonal Pool Equipment — Filters, Chemical Feeders, Flow Indicators, Flow Controllers, Lint Catchers, Pool Cleaners, Fittings and Recirculating Equipment — backed by over 25 years of experience exclusively in the field of water purification —assures modern engineering practice, undivided equipment responsibility and continually attractive, as well as safe, pool water.

Send for Bulletin giving typical layouts of the modern pool. Bulletin 2207—Indoor Pools. Bulletin 2208—Outdoor Pools.

International Filter Co.
Water Softening and Filtration Plants
General Offices
326 East Van Buren Street, Chicago

INTERNATIONAL

TWO NEW CATALOGS!

PLAYGROUND EQUIPMENT
WATER SPORTS DEVICES

Should you be interested in either Playground Equipment or Water Sport Devices you will appreciate seeing the new line of "American" products. Designate which catalog you wish and it will be sent immediately.

AMERICAN PLAYGROUND DEVICE CO.
ANDERSON, INDIANA

Install Stewart Fence

When Fencing questions arise, consult Stewart's 4 pages of Fence specifications in the Municipal Index for reliable data. And always — ALWAYS —get Stewart to figure on your requirements for Wrought Iron and Chain Link Wire Fences.

The Stewart Iron Works Co., Inc.
813 Stewart Block
Cincinnati, O.

Stewart IRON AND STEEL FENCES

A CLEAVER BOOSTER IN OPERATION IN DANE COUNTY, WIS.

A Booster for Pumping Asphaltic Road Oil

In pumping straight asphaltic road oil or cut-back road oil from an insulated tank car, it is necessary to use some device for raising the temperature, so that it may be applied hot and at the specified temperature to the road. The No. 2 pumping booster shown in the accompanying illustration and manufactured by the Cleaver-Brooks Co., 740 North Plankinton Avenue, Milwaukee, Wis., performs this service.

The material is being heated to application temperature as it passes through the booster and is then delivered into a distributor or transfer tank. A three-way valve, mounted on top of the booster, allows the material to be pumped back into the car between loads. The booster method accomplishes two desirable results, namely, rapidly raising the temperature of the material, and also agitating the material in the car, preventing separation of the light, volatile portions. The No. 2 booster raises the temperature of a 10,000-gallon tank car 50 degrees per hour with a fuel consumption of approximately 24 gallons of 30-40 gravity fuel oil costing approximately 6.5 cents per gallon. The 4-cylinder gasoline engine which furnishes the power for the 3-inch reversible asphalt pump as well as the burner mechanism consumes approximately 4 gallons of gasoline during this operation.

A thermometer is provided for registering the temperature of the material at the discharge outlet. The four-speed forward and one reverse transmission provides a flexible pumping speed for all operations, and, with the three-burner control, bituminous material may be delivered at any desired temperature.

A 70-Carload Shipment of Road Equipment

The largest single order on record for big unit road machinery, consisting of fifty-six 10-ton Autocrat rollers and sixty-nine 101 graders, was recently awarded to The Austin-Western Road Machinery Co., 400 North Michigan Avenue, Chicago, Ill., by the Pennsylvania State Highway Department. These machines, built and shipped in record time, will be used to improve the 20,000-mile primary system of township highways which are now under state control through a recent act of the State Legislature.

A System of Remote Metering and Indication of Water Levels

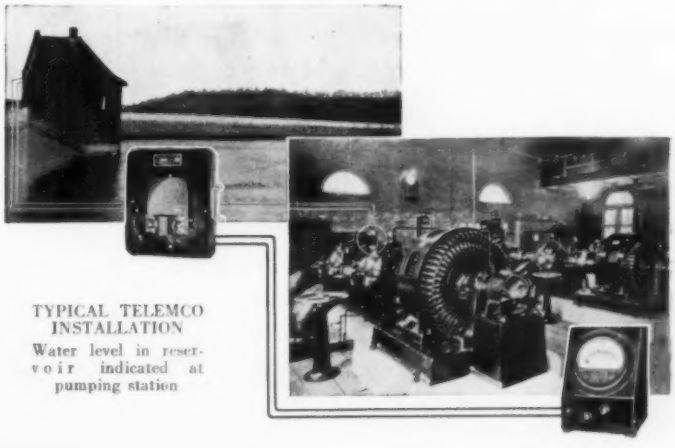
For the purpose of indicating the quantity or magnitude of flow or water level at remote points, the Telemco system has been developed by the Pittsburgh Equitable Meter Co., Pittsburgh, Pa.

This remote indicating and recording system is developed particularly for measuring pressures of gas and water maintained in outlying points in a distribution system, and for the indication of water level above a dam or to show the opening and closing of gates. The Telemco system consists of a transmitter and a receiver. The transmitter is placed where the measurement is to be taken, and the receiver where this measure is to be indicated or recorded. The transmitter consists of a variable inductance in combination with a fixed resistance.

The receiver consists essentially of a special purpose vacuum tube, a milliammeter and a voltage regulator. Only two connecting wires are needed between the transmitter and the receiver, and in many cases where the distance is not too great a single wire with a ground return may be used. The current used, 10 milliamperes, at 35 volts, is so small that it is not objected to by any telephone or telegraph company from which lines might be leased. Power is required only at the receiving end, which is a great advantage in cases where it is desirable to install the transmitter in manholes or other places where a source of electricity is not available for use.

It is impossible for sparks to occur at the transmitter, since there are no brushes or contacts. There is practically no limit to the distance over which the system may be used for recording levels.

Since the device consists of only a vacuum tube, a milliammeter, a fixed resistance, a variable inductance and a static voltage regulator, it is extremely simple, rugged and reliable. It is not influenced by currents which might be induced in the line of extraneous influences, such as nearby high-tension transmission lines, transformer stations and electric railways.



TYPICAL TELEMCO INSTALLATION
Water level in reservoir indicated at pumping station

A New 2-Ton All-Purpose 3,800-Pound Truck

A 2-ton truck priced to sell under $1,000, known as the Federal Model G5, has recently been announced by the Federal Motor Truck Co., Detroit, Mich. This model embodies rugged all-truck construction, a standard chassis weighing 3,800 pounds and carrying a total allowable weight of 11,500 pounds. It is powered with a 6-cylinder L-head type engine, $3\frac{3}{8}$-inch bore by 4-inch stroke developing 72 horsepower.

Four-speed transmission, four-wheel hydraulic brakes, Timken bevel type full-floating rear axle, 11-inch heavy-duty clutch, a heavy pressed steel frame, auxiliary springs, and disc wheels, are but a few of the features of this new truck, which is built in 132-, 144-, 152-, and 164-inch wheelbase lengths. Other outstanding features are a distinctive type chromium-plated radiator, pressed steel channel front bumpers, and a long hood with straight-line cowl and extra-large fenders.

Freeman Quadrive Locates in Pontiac

The Freeman Quadrive Corporation, successor to the Freeman Motor Co., of Detroit, is planning to locate its headquarters and a four-wheel-drive truck factory in Pontiac, Mich., with a production and sales force of 150 men and a schedule of a truck a day. As heretofore, four models will be produced, covering the entire heavy-duty field. The models will be produced in the 4-, 6-, 8- and 10-ton range, selling for $4,900 to $7,600. Power is transmitted to the front wheels directly, and not through universals; steering is thereby facilitated. The four-wheel application of power makes for greater effectiveness in difficult terrain, on slippery streets and in heavy traffic. The Freeman Quadrive Corporation results from the reorganization work of Major M. Bollstrom, the President and General Manager. Other officers include Lewis C. Jarrendt, Vice-President and Treasurer; C. Earl Currah, Secretary and General Counsel; William F. Dick, Sales and Advertising Manager; and Clifford A. Pryne is Factory Manager.

SINCE 1867

COLDWELL

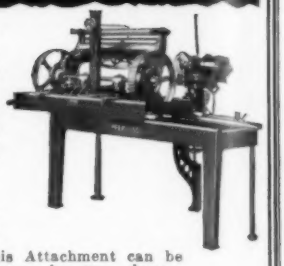
Above: Coldwell "L-Twin" motor lawn mower and roller. Mows and rolls simultaneously 4 to 6 acres a day on one gallon of gasoline. With gang units attached it cuts a 60-inch swath, ten acres a day on one gallon of gasoline.

Economical and Dependable Lawn Mowing Equipment

THE Coldwell "L-Twin" is a compact and flexible unit capable of doing all the trimming—then when equipped with the extra gang units its capacity is more than doubled. Large capacity is combined with flexibility. The entire outfit is simple and economical to operate, strongly built and dependable. Models of greater or less capacity are available. Full particulars on request.

COLDWELL LAWN MOWER CO., NEWBURGH, NEW YORK, U. S. A.
In Canada—Taylor-Forbes Co., Ltd., Guelph
Manufacturers of ***DEPENDABLE*** *Lawn Mowers*—HAND, HORSE, GASOLINE ELECTRIC

THE PEERLESS MOWER SHARPENER



The New Model D Peerless Mower Sharpener grinds all types of power-driven, fairway, putting green and hand mowers without removing mower wheels or reel knives. Carriage has travel of 42 inches. Grinds with amazing speed and accuracy. 6-inch grinding wheel driven by ⅓-hp. motor and V belt. Very quiet running.

Reconditioner Attachment furnished at an additional price for "lapping in" putting green mowers with emery paste. This Attachment can be quickly clamped to the Sharpener by two clamps. Write for Catalog.

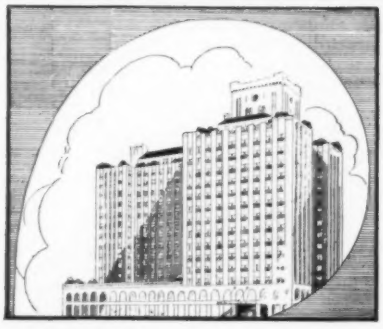
THE FATE-ROOT-HEATH COMPANY
132-168 BELL STREET, PLYMOUTH, OHIO

ONCE DOES IT

Sprinkle DOLGE WEED-KILLER on drives, walks, gutters, tennis courts, running tracks, playgrounds: weeds will stay off for the rest of the year. Powerful chemical. New formula insures penetration of roots; kills completely. One gallon covers 1,250 square feet. Kills poison ivy, other rank growth. Saves time, labor, money. Write for details, free lease offer on all-steel sprinkling cart.

THE C. B. DOLGE CO., WESTPORT, CONN.

DOLGE WEED-KILLER
"Sprinkles Weeds Away"



THE HOTEL MONTCLAIR

LEXINGTON AVE. 49TH TO 50TH ST. NEW YORK

Directly Opposite the Waldorf-Astoria

800 ROOMS

EVERY ROOM WITH BATH

From $3.00 per day

A RADIO IN EVERY ROOM

Short walking distance from Grand Central Terminal and B. & O. Motor Coach Station. Ten minutes by taxi from Pennsylvania Sta.

American Home Cooking Served in a Notable Restaurant

OSCAR W. RICHARDS, *Manager*

APPLYING THE PRONE PRESSURE METHOD OF ARTIFICIAL RESPIRATION, IN CONJUNCTION WITH THE H-H INHALATOR, TO A VICTIM OF IMMERSION

What to Do in Case of Accidental Drowning

Those in charge of municipal parks where there are ponds and lakes and where swimming pools are operated are becoming more and more acquainted with methods of producing artificial respiration. The use of the prone pressure method is well known, but natural respiration can be stimulated even more quickly by the use of an H-H Inhalator, one or more of which should be installed at every swimming pool, boathouse and bathing beach. When breathing stops, begin artificial respiration immediately. Do not delay an instant. Rescue the victim as quickly as possible from the water, and as soon as he is out of the water start artificial respiration. Inhalation of Carbogen, which is a mixture of 7 per cent carbon dioxide plus 93 per cent oxygen, should be given by means of the H-H Inhalator manufactured by the Mine Safety Appliances Co., Braddock, Thomas and Meade Streets, Pittsburgh, Pa. At the same time artificial respiration should be induced. Call a doctor, but do not move the patient.

The cardinal points of artificial respiration are: Place the patient on the abdomen, and, if possible, the victim's body should be laid with head and chest lower than the feet. Turn the patient's head on one side and rest it on the forearm, extending the other arm forward. Kneel and straddle the patient's thighs, facing his head, and with fingers and thumbs together, place the hands on the back with the little finger over the lowest rib. With the elbows straight, swing forward slowly, allowing the weight of the body to force the air out of the lungs. This operation should take about two seconds.

Now release the pressure by swinging backward, allowing time for the lungs to fill up again. Continue pressure and release twelve to fifteen times per minute until natural breathing is restored. Keep the patient warm and administer the usual shock treatment. This is the prone pressure method, and when used with an H-H Inhalator is most effective in resuscitating victims of immersion. The accompanying illustration shows the method of applying the prone pressure method in conjunction with the H-H Inhalator. The picture was posed by employees of the Mine Safety Appliances Co.

Multiple Blades to Knock Washboards

A multiple-blade attachment for Auto Patrols has been announced by the Caterpillar Tractor Co., Peoria, Ill., as a means of completely doing away with washboards on gravel roads. The multiple-blade attachment is designed to cover a swath equivalent to that obtained by the use of a standard 12-foot blade. The attachment consists of nine short cutting blades of 8 x ¼-inch cutting edge material 27 inches long mounted on a frame at right angles to a leveling blade of 8 x ½-inch cutting edge material 12 feet long.

Installation on Caterpillar Auto Patrols in the field may be accomplished by cutting only two rivets and replacing with bolts which are furnished with the attachments. If at any time it is desirable to use a regular blade for shoulder trimming, or the like, a substitution is easily effected. The short parallel blades in front do the hard work of eliminating the washboards.

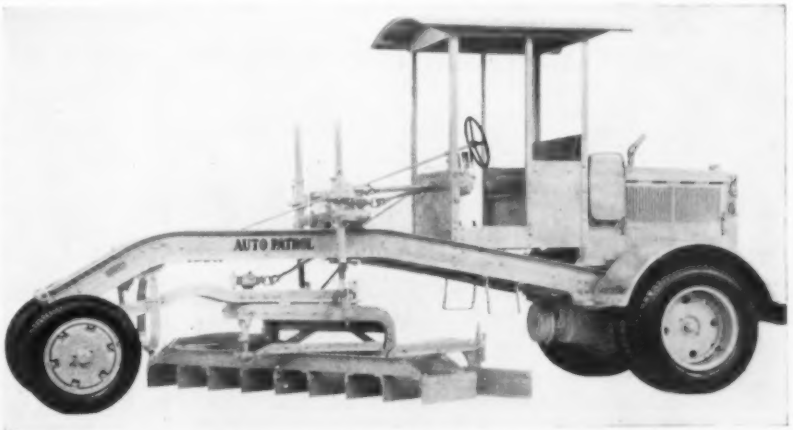
The attachment is angled slightly to the right or left for operating position. Just enough angle is allowed so that the path of each blade meets the path of the succeeding blade. In such operating position these blades have very sharp cutting edges that rival a scarifier for removing bumps, and shave the base, below the surface material, to a smooth grade.

The manufacturer states that speeds of 6.5 and even 10 miles per hour without chatter are now possible. The long rear blade is adjustable and is placed at a level that is just high enough to trowel the surface material back in place in uniform thickness over the entire swath without leaving the objectionable and dangerous windrow to hinder traffic.

A New Tractor for Semi-Trailers

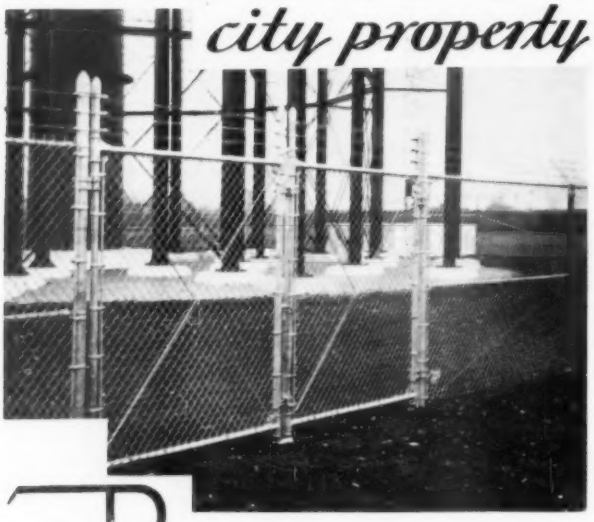
A new super-heavy-duty tractor for heavy transport hauling, known as Model 691, has been announced by the White Company, Cleveland, Ohio. It is designed to meet the new 40-foot maximum allowance in certain states and makes possible the use of longer trailers and bodies without increasing the overall combination vehicle length. The engine is the White 5-AD, 6-cylinder power plant with a displacement of 500 cubic inches. It is of the overhead valve type, has a seven bearing counter-weighted crankshaft with aluminum alloy pistons and pressure and metered lubrication. It has a double unit oil filter with metallic filtering elements, a mechanical fuel pump and governor. The air-compressor is mounted at the front of the engine and is driven directly through a splined connection from the end of the crankshaft.

A pressed steel channel section type frame of alloy steel is used with heavy cross members for maximum strength. Heavy-duty type tow hooks are furnished front and rear, and a heavy channel section pressed steel bumper is standard equipment. The front axle has been specially designed for a short turning radius, and the rear axle is of the double reduction type. The tractor is equipped with a 65-gallon gasoline tank mounted on the right side of the frame, and an additional 45-gallon tank can be mounted on the left side if desired. The standard tire equipment is 10.50/24 balloon single front, and 10.50/24 balloon dual rear on cast steel wheels. It is equipped with semi-elliptic front and rear spring.



A CATERPILLAR AUTO PATROL EQUIPPED WITH THE NEW MULTIPLE-BLADE ATTACHMENT TO CUT OUT WASHBOARDS

..PROTECT *or* ABANDON *city property*



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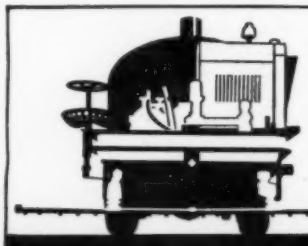

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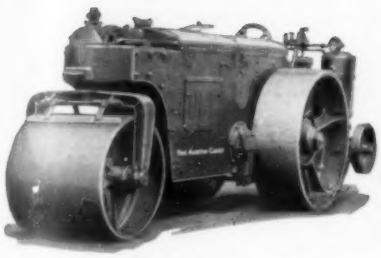


THE NEW AUSTIN CADET ROLLER

A New Model of a Well-known Roller

The Austin-Western Road Machinery Co., 400 North Michigan Avenue, Chicago, Ill., has announced a new model of the Austin Cadet roller, patterned more closely than ever after the Austin double-spur gear drive Autocrat roller. The new Austin Cadet is made in 5-, 6-, 7- and 8-ton sizes, steers more easily, has a full differential action which equalizes the power on the rear rolls whether it is operating on a sharp curve or on a straight of way, has automatic shifting of weight on the front roll, which concentrates the pressure on high spots where it is needed, and has the well-known double-spur gear drive. This new model has a lower center of gravity, unusual fuel and lubrication economy, an unusually large air-tank capacity, is balanced scientifically to minimize pitching and side swaying, and has speeds adaptable for all work. Its high-built, full-length side plates provide stronger construction. Its specially built transmission and differential are tested for eight hours under load before shipping. It has disc clutches which can be adjusted and replaced easily. It has sufficient power for climbing steep grades as long as the rear wheels have traction. The water-cooled air compressor does not stop when the motor is idling. The gears are shifted as easily as on a truck, with one clutch lever controlling all forward and reverse motion. In the construction of the roller there is generous use of anti-friction bearings. It is built with a short wheelbase for easy maneuverability, and it is equipped with a powerful scarifier and is so built as to be easily accessible and conveniently arranged for making adjustments and repairs.

A New Auto Patrol Grader

A second Auto Patrol has been added to the line of the Caterpillar Tractor Co., Peoria, Ill. This new Auto Patrol No. 7 has all the performance features of the older No. 9 machine, such as three-lever power control, one lever for raising or lowering the left end of the blade, one for the right end of the blade, and one available for either scarifier or snow-plow attachment. It is a strong machine, using the same frame members as the No. 9, and has weight adequate for most maintenance work. It has dual 38 x 7 lug-type Road Builder pneumatic tires in the rear and 32 x 6 truck-type tires.

A New 6-Cylinder 1½-Ton Truck

The engineering specifications and the mechanical details of a new 1½-ton 6-cylinder Speed Wagon have just been announced by the Reo Motor Car Co., Lansing, Mich. The loading space, 102 inches behind the cab on the 140-inch wheelbase models, and 126 inches on the 164-inch model, is unusually large for commercial vehicles of 1½-ton capacity. These trucks are powered with the Gold Crown engine developing 68 brake horsepower at 2,800 rpm. The engines are made with chrome nickel alloy cylinder blocks and unusually large area for the seven main crankshaft bearings and the piston pins and have a very effective full force feed engine oiling system.

The crankshaft is 2 5/16 inches in diameter. The main bearings are of the close limit, interchangeable type, fitted without shims and providing a total length of 12 inches with a babbitted surface of 87.12 square inches. The truck has four-speed transmission and long, flexible springs measuring 40 x 2 inches in front and 50 x 2½ inches in the rear. Speed Wagons are also built for trailer operation with vacuum brake control.

A New Silencer for Diesel Engines

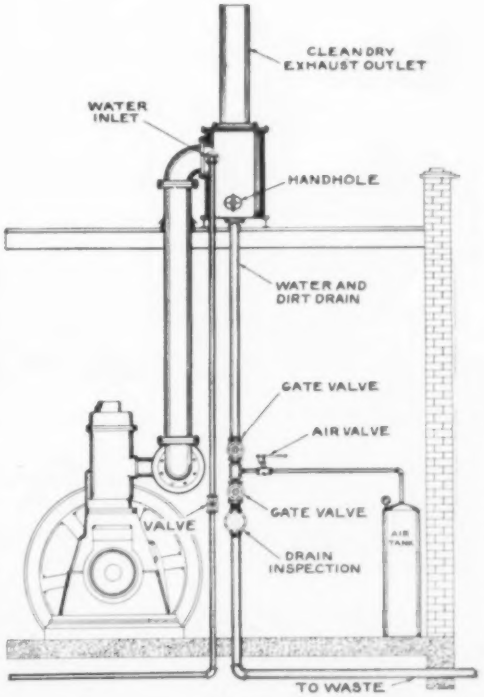
Diesel engines are being used in increasing numbers in municipal power plants. They run for long periods without need for repairs, are economical in fuel construction, but, like all combustion engines, have a noisy exhaust. The Maxim Silencer Co., of Hartford, Conn., has recently announced a new exhaust washing silencer which combines a water scrubber and a Maxim silencer in one corrosion-proof unit. This silencer is equally applicable to gasoline, gas and diesel engines.

This new Maxim silencer is known as Model EW and is built of cast iron throughout, making it corrosion-proof, only a moderate amount of water being required, since the cooling circulation is sufficient. It is smaller and lighter, size for size, than the standard culation is sufficient. It will quench all sparks, wash the exhaust clean of all carbon and dirt, and quiet the exhaust just as much as the standard dry-type Maxim exhaust silencers.

The exhaust inlet is on the side of the pot near the top. The inlet for the washing water is adjacent to the exhaust inlet, a little to one side. The dry, clean exhaust outlet is at the center of the top head, or cover plate. The drain for the water and the dirt is at the center of the pot bottom. There is a very large handhole in the side of the pot near the bottom for cleaning out the separating chamber. Feet are cast on the side of the pot at the bottom, so that the silencer may be bolted down to the deck of a vessel, crane, shovel or dragline or to any stationary foundation in a power plant or factory.

The engine exhaust pipe is attached to the side inlet, near the top. The water is sprayed across the incoming exhaust stream, inside the device, just after it enters. The water and the exhaust gases then travel down through the combination silencer and washer. This part of the Model EW is actually the same acoustically as the standard Model M2 wet-type Maxim silencer, except that it is mechanically altered so that it is in a vertical form rather than in the customary horizontal form. The last plate in this silencer section has a number of blades, properly proportioned and designed to give the mixture of gases and water a violent whirl around the inside surface of the separating pot, which is at the bottom of the whole device. This separates the water, with its entrained dirt, from the gases. The gases then move to the center of the device and go up the central standpipe, and out. The water and dirt move to the bottom and go out of the large drain, leaving a clean exhaust.

The entire process of washing and silencing is performed while the gases and the water are moving downward through the device. This assists materially in reducing back pressure, as the exhaust never has to lift the water against gravity. The Model EW is extremely simple mechanically, owing to this arrangement, and yet it very successfully accomplishes the threefold purpose of its design—silencing, washing, and separating.



AN INSTALLATION OF A MODEL EW MAXIM SILENCER IN A POWER PLANT

Guard the Head from Injuries

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BULLDOG HELMETS are strong, serviceable, protective hats of good appearance, waterproof and molded in one seamless piece of insulating materials. The broad, rigid brim is designed to protect the Face, Eyes, Ears, Neck and Shoulders from falling and flying materials and also to deflect water from the neck.

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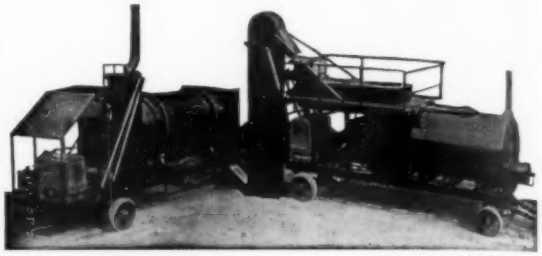

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a watched bearing seldom overheats

But who wants to keep an eye —or a hand—on a bearing to be sure it doesn't, when Dixon's Graphite Cup Grease spreads its cooling, smooth, wear-resisting lubrication to every part of the bearing.

In Dixon's Graphite Cup Grease, finely pulverized Flake Graphite—itself a lubricant—is combined with the finest quality greases. Flake Graphite, brought to the bearing surfaces, takes the load and wear — prevents overheating and scoring. There's economy in such lubrication.

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THE LITTLEFORD CUT-BACK DISTRIBUTOR IN ACTION ON A PARKWAY IN WASHINGTON, D. C.

A Small Distributor for Construction or Maintenance

A machine known as a cut-back distributor, which is the result of three years' experimental work and development, has been announced by Littleford Bros., 500 East Pearl Street, Cincinnati, Ohio. This machine is particularly adaptable for handling penetration work where the area does not exceed 50 square yards or for penetration gutters such as contractors are called upon to construct on many highway projects. It is particularly adaptable for maintenance work in repairing small areas of broken surface, for treatments by light or heavy skin patches, for putting non-skid treatments on slippery sections by inverted penetration, and for applying paint coats to holes prior to the placement of patching material. Thus the machine has its particular field of service both for contractors and for municipal, county and state highway departments.

The cut-back distributor is equipped with rubber tires, lending itself to fast and economical portability, as it may be hooked behind even a small 1-ton truck and carried wherever the truck can go at truck speed. The power air-compressor supplies an even and constant pressure, protected by suitable safety valves that permit the use of the distributor without any delays for hand pumping. The heating arrangement permits the use of heavy asphaltic oils for the semi- or full penetration job, in addition to the fact that cold material and emulsions may be used when desired without using the heating equipment.

To prevent the clogging of the distributor hose and spray nozzle, a special blowout attachment is provided, so that, after operations have ceased, all material remaining in the hose may be quickly blown out by compressed air at 50 pounds pressure. The capacity of the tank is 75 gallons or approximately enough asphalt or tar to complete any unit patch of 50 square yards, which is about the average general area patched at one set-up.

Patent Suit Settled

W. F. Rockwell, President of the Merco Nordstrom Valve Co., a subsidiary of the Pittsburgh Equitable Meter Co., announces that the suit against the Walworth Company has been terminated by entry of a consent decree in favor of the Nordstrom patents, and cross-licensing arrangements have been established under which the patents are available to Walworth on payment of satisfactory royalties.

Nordberg Moves New York and Los Angeles Offices

The Nordberg Manufacturing Co., Milwaukee, Wis., has announced the removal of its New York office from 51 East 42nd Street to the Lincoln Building, 60 East 42nd Street, and the removal of its Los Angeles office from 1462 Stanley Avenue to the Subway Terminal Building, 417 South Hill Street, Los Angeles, Calif.

Use of Electro-Hydraulic Valves in Radio City

Five installations of Enberg electro-hydraulic valves have been made in the various units in Radio City by the John Weil Plumbing Co. of New York, J. L. Murphy, Inc., of New York, and James McCullagh, Inc., of New York. These valves were sold by The Ludlow Valve Manufacturing Co., Troy, N. Y., eastern agents for the Benton Harbor Engineering Works, Benton Harbor, Mich., manufacturer of Engberg electro-hydraulic valves.

The installations included one 3-inch Ludlow valve iron body bronze mounted, with a 4-inch bronze cylinder and Enberg control device and one similar 5-inch valve, for Theatre No. 8; one 3-inch and one 6-inch installation in Theatre No. 10; and one 12-inch valve for Units 1 and 9 of the Radio City project. The installation in Theatre No. 8 on the John Weil contract is typical. The 3-inch valve is on the down supply from the house tank as a regulator for the low-level fixtures. The 5-inch valve is on the condensor discharge in the suction tank. Both valves are used to maintain a level in the basement tanks.

A New Line of Engines

A new line of engines, claimed to have increased efficiency, smoother operation and longer life, has recently been announced by the Waukesha Motor Co., Waukesha, Wis. These Full-Power engines are more conservatively rated than previous models, making it possible for the user to utilize his engine for all regular requirements without having to draw on the engine for its full capacity.

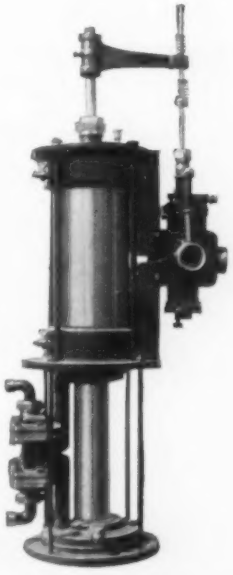
One of the features of these engines, the combustion chamber design of which is based on the Ricardo principle, is the new metals used in its manufacture. Waukesha Alloy 221, a new metal recently developed in the Waukesha laboratories, is a special iron for cylinders, with the hardness of chrome nickel steel and a tensile strength equal to machine steel. Another new iron alloy was developed for the exhaust manifolds in this full-power line. New bearing metals are used. The bearings are integral with the connecting rods and are cast from electrically controlled babbit pots by centrifugal casting machines.

A Hydraulic Booster Pump for Chemical Solutions

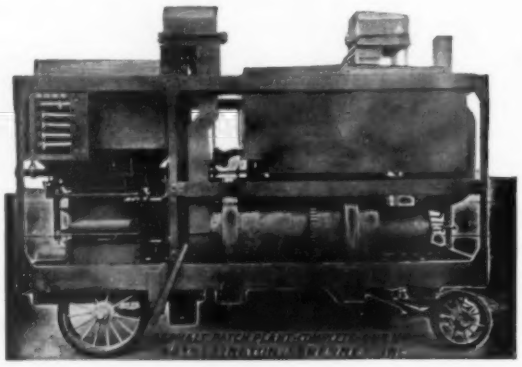
With the increasing use of chlorine, soda-ash, ammonia and alum solutions in both raw and filtered water-devices are necessary to pump this water into mains which are under pressure. The Ross Valve Manufacturing Co., Inc., Troy, N. Y., manufactures the Ross hydraulic booster pump for this purpose. It is a reciprocating type of machine which receives the solution, in the case of the soda-ash and alum pumps, direct from the mixing chamber through the suction into the pump, and then discharges this solution into the mains under pressure. The alum pumps, because of the chemical action of the solution, are made up of an acid-resisting bronze. When utilized for chlorine, the pump furnishes the water at a constant rate to the injector, where the chlorine is applied and the solution then discharged into the mains.

In the design of the hydraulic booster pump for any installation, the pump end is governed by the pressure at the point of application, and in some cases the design of the injector, as well as the quantity discharged per minute. The motive power or engine end of the hydraulic booster pump of course is governed both by the requirements of the pump end and the hydraulic power which may be available.

This pump is an outgrowth of the reciprocating type of hydraulic engine which was originally designed and manufactured for use in operating the wind bellows of organs, the first of which was manufactured in 1885. About 1893, a pump was attached to the engine, and this assembly made a single self-contained unit utilized for the pumping of cider in cider mills. This equipment from time to time was furnished for pumping various liquids where the use of water for power was possible.



THE ROSS HYDRAULIC BOOSTER PUMP



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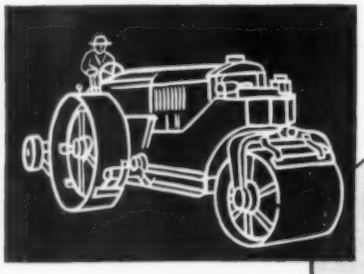

IN THE LAST ANALYSIS

. . . and after everything has been said and done . . . day to day performance and year in and year out dependability determine the worth of a road roller. Those are factors of greater importance than price . . . the foundation stone upon which Buffalo-Springfield success was founded.

Three wheel and tandem models in all practical sizes. Steam and motor driven. Scarifier and other attachments when so ordered.

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Carey Elastite EXPANSION JOINT

makes *Good* Paving *Better*

The "sandwich" joint which protects concrete paving against expansion and contraction stresses. Proved by 20 years' use in highways and sidewalks in all parts of the world. Large stocks in principal cities insure immediate shipment. Write for catalog and 1932 prices.

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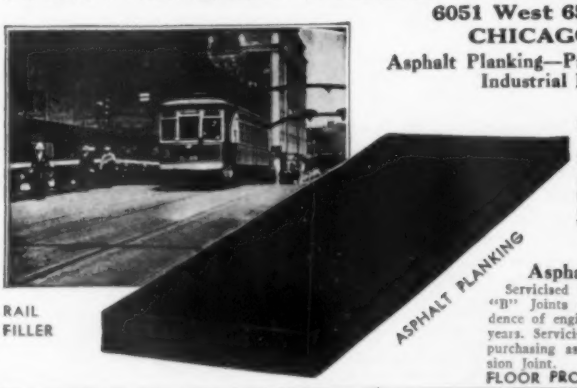

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Formed of wood or vegetable fiber into a boardlike structure saturated with waterproofing material—a resiliently compressible and re-expanding product.

Kennedy Hydrants and Valves for Chicago World's Fair

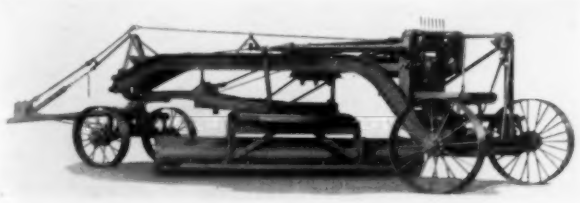
All the fire hydrants and valves in the elaborate fire-protection and water-supply system for the Century of Progress Exposition to be held in Chicago, Ill., in 1933 are being furnished by The Kennedy Valve Manufacturing Co., Elmira, N. Y. It is estimated that about 100 fire hydrants will be required, and these are all to be of the Kennedy Safetop design. The hydrants have a 6-inch bell connection to the mains, with a 5-foot depth of trench. Each hydrant is to have a 5-inch inlet valve, two 2½-inch hose nozzles and one steamer nozzle.

Estimates based on the preliminary plans of the Exposition engineers and orders already received by The Kennedy Valve Manufacturing Co. indicate that over 250 iron-body water gate and check valves will be required ranging in size from 5-inch up to 24-inch. These valves are all for 150 pounds working water pressure, with flanged or bell ends, most of the larger valves being furnished with a by-pass.

Orders have now been received for this equipment to be used in the Hall of Science Area, Amusement Zone Area, Island Area, Pump House D and General Exhibits Area. When completed, the fire protection system will comprise three fully equipped fire stations with a group of pumping plants and an automatic alarm system in the buildings and around the grounds. Each building is to have standpipes with hose connections, and water for the system will be drawn from Lake Michigan and the lagoon between the mainland and Northerly Island, on which many of the buildings are to be located. The fire-protection system will also have the cooperation of the facilities and organization of the Chicago Fire Department.

Seven Levers Operate New Power-Controlled Grader

There are seven levers in a row in front of the operator of the new Caterpillar Sixty grader recently placed in production by the Caterpillar Tractor Co., Peoria, Ill. Each lever controls action in one direction when pushed forward, and in the opposite direction when pulled back. Five of the levers control the most frequently made adjustments. The sixth, through a shift, controls either the center shift or three-point control. The seventh, through a shift, controls either the lean of the two rear wheels or the side shift of the rear axle, a total of eighteen power-controlled actions.

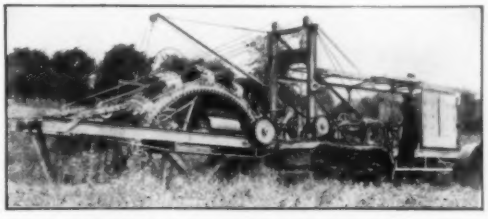


THE POWER-CONTROLLED SIXTY GRADER

The power-control mechanism is of the same type as on the Auto Patrol: the control levers engage sliding jaw clutches to direct the power, transmitted through the constantly operating gears, to the point of action. The power to operate the controls is provided by the engine mounted on the grader. It is a single-cylinder Caterpillar engine with a 3⅝-inch bore, 4-inch stroke, and developing 5 horsepower at 1,300 rpm. The weight of the complete unit is 11,950 pounds.

The Importance of the Clutch

One of the most important units in every piece of construction and hauling equipment in which the gasoline engine is the prime mover, is the clutch. Though hidden from sight and consequently not given much thought by either owners or operators, the clutch makes it possible to control power in the fullest sense. William J. Pearmain, Chief Engineer, Twin Disc Clutch Co., Racine, Wis., de-



A HEAVY CLUTCH IS A NECESSITY ON BUCKEYE PIPE LINE DITCHERS

fines clutch performance as "to connect or couple the separate parts of a mechanism and cause them to revolve at similar speeds."

Consider a portable screening, crushing and loading plant which converts rock and gravel into various sizes of stone and sand. Here clutches are of paramount importance and a failure means an expensive shut-down. Twenty-ton gasoline locomotives haul side-dump industrial or standard-gage cars on construction work. Here extra-heavy centrifugal release clutches are used. On pipe line ditchers the clutch must be unusually heavy, yet very sensitive, to afford correct and instantly responsive control; and on the big 27-E pavers which keep going day and night the clutch must be powerful, unfailing, and yet able to respond like a flash at all times.

Motor trucks in heavy hauling, and all other heavy gasoline-engine-driven equipment require dependable clutches for satisfactory operation.

THE NEW RAWLS MOTOR SICKLE MOWER

A Motor Sickle Highway Mower

A substantially built motor sickle highway mower known as Rawls Type 31 has recently been announced by the Rawls Manufacturing Co., Streator, Ill. The cutter bar of this mower will cut at any angle and is easily and instantly raised or lowered for cutting various slopes or for passing obstructions. The speed of the sickles can be changed for cutting light or heavy vegetation without undue wear on the machine or expensive gear transmissions. This is accomplished by variable speed engine control and a direct V belt drive which eliminates both speed transmission and many gears housings, bushings, shafts, etc. The mower is mounted on pneumatic tires and has Timken roller bearings throughout. The tongue is so mounted in connection with the steering wheel that the mowing machine can be steered from 3 to 4 feet to either side of the towing unit. The operating motor is mounted on the automatic swing gate with the cutter bar.

Worthington Consolidates Cincinnati and Buffalo Plants

The Worthington Pump and Machinery Corporation, with executive offices at 2 Park Avenue, New York, and general offices at its Harrison, N. J., works, has announced the transfer and consolidation of the designing, engineering and manufacturing activities formerly carried on at its Cincinnati, Ohio, works with those of its Buffalo, N. Y., manufacturing plant. This in no way affects Cincinnati's district sales office, which is under the management of Earl Vinnedge.

Jones Forty Years with Rensselaer Valve Co.

A. E. Jones, Sales Manager of the Chicago Branch of Rensselaer Valve Co., Troy, N. Y., on August 1 completed forty years' service in the sales organization of the company. He is conducting the business of the company in the same suite of offices, at 1108-9 Monadnock Block, where he became associated as a salesman under his father, forty years ago.

Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

An Advanced Street-Lighting Report

THE New York State Conference of Mayors and Other Municipal Officials has reiterated its interest in a progressive street lighting policy which was evidenced in 1924 by a report on street lighting prepared by a joint committee representing the cities and the electric utilities. In order to keep in step with improvements in the street-lighting art, another such committee was appointed in the fall of 1931, which has recently rendered a notable report.

The committee consisted of Harvey N. Smith, Superintendent, Bureau of Gas and Electriciy, Syracuse, Harold W. Baker, Commissioner of Public Works, Rochester, and Nicholas J. Kelly, Chief Engineer, Department of Water Supply, Gas and Electricity, New York City, appointed by the Conference; and T. H. Yawger, Superintendent, Electric Department, Rochester Gas & Electric Corporation, A. C. Smith, General Sales Manager, Buffalo General Electric Co., and John W. Green, Assistant Secretary, Westchester Lighting Co., appointed by the Empire State Gas and Electric Association in response to the Conference's invitation. As Mr. Kelly found it impossible to serve, William G. Quirk, Supervising Chief Inspector of the Department of Water Supply, Gas and Electricity, New York City, was appointed in his place. At the first meeting of the committee Mr. Baker was elected chairman, but found it necessary to resign before the work was completed. Mr. Quirk was thereupon elected chairman.

W. P. Capes, Executive Secretary of the Conference, and C. H. B. Chapin, Secretary of the Association, served as ex-officio members of the committee, and Albert H. Hall, Director of the Bureau of Training and Research of the Conference, acted as secretary.

Lighting for Traffic

The committee recognized the importance of the relation of vehicular traffic and street lighting, as indicated by the following excerpts from its report:

"With the great increase, both in volume and speed, of vehicular traffic during the hours of darkness and with the more general recognition of the responsibility of dark roadways for traffic accidents, street lighting may now very properly be studied primarily from the standpoint of its value in promoting safety and expediting traffic. If so planned as to be effective in this regard, street lighting will usually be adequate for other utilitarian purposes, including crime prevention, but will need to be supplemented to some extent where display effects are desired. . . .

"In connection with future studies, it would be helpful if local police were required to so report traffic accidents that they could be tabulated on the basis of natural light conditions—daylight, dusk or dark. . . .

"Street and highway lighting should be adequate to permit the safe use on motor vehicles of small lights, depressed or lower headlight beam, instead of glaring headlights. . . .

"The increasing difficulties of the traffic problem have caused street lighting experts to give this subject more concentrated study under these changed conditions. Lights are generally mounted higher than formerly to remove them from the direct vision of the motor car driver and frequently they are being suspended beyond the curb, in order to take advantage of a silhouette due to the better distribution of brightness. The use of comparatively large units is favored as being more efficient than the smaller sizes."

Planning

The importance of comprehensive planning of a street lighting system was stressed, and five definite recommendations made:

"Street lighting to be effective cannot be a 'hit or miss' proposition. It is absolutely essential that a definite plan and program be adopted and that it be strictly adhered to. In the preparation of such plan and program, the committee recommends the following procedure:

First, adopt a simple and logical classification of streets. Uniform classification is highly desirable. The following classification as used in the "Code of Street Lighting" of the Illuminating Engineering Society, is recommended: Business streets, residence streets, alleys, park drives, highways.

All of the above are subject to the following additional classification:

Light traffic thoroughfares—not more than 500 vehicles per hour in both directions.

Medium traffic thoroughfares—not more than 800-1,200 vehicles per hour in both directions.

Heavy traffic thoroughfares—not more than 1,500 vehicles per hour in both directions.

Second, make a survey of the entire community with particular reference to future as well as present conditions, and the classification of streets according to the schedule adopted.

Third, prepare a map showing by the use of colors the classification to which each street is allocated. Such a map will frequently result in some reclassification in order to avoid too sudden changes from brightly lighted to moderately lighted roadways.

Fourth, adopt a standard of lighting for each classification. The requirements for each classification and recommended specifications are discussed later in this report.

Fifth, adopt a program of lighting improvements to be carried out over a period of years, in order to bring the street lighting throughout the community up to and in accord with the standards adopted for each classification. In this connection, it has been found desirable to use an additional map on which the program for each year is shown by a different color. This map and color scheme should not, however, be confused with the map showing the classification of streets referred to above.

The recommendations of the committee follow fairly closely those contained in the Illuminating Engineering Society "Code of Street Lighting," which appeared in THE AMERICAN CITY in November, 1930, at page 149, and was summarized on a chart in October, 1931, at page 146. In certain respects they differ from the I. E. S. code; the recommended minimum mounting height for lights on medium- and heavy-traffic thoroughfares is placed at 20 feet instead of 18, while on highways a 20-foot minimum is permitted instead of 25; at all street intersections at least two lights on diagonally opposite corners are prescribed. The chief recommendations are as follows:

For light-traffic thoroughfares, the minimum recommended is a staggered arrangement of lighting units, with luminaires suspended on brackets beyond the curb at a mounting height of not less 18 feet, a spacing not greater than 150 feet and a lamp of not less than 4,000 lumens (400 cp.), equipped with proper diffusing media.

For medium-traffic thoroughfares, the mini-

mum recommended is a staggered arrangement of lighting units, with luminaires suspended on brackets beyond the curb at a mounting height of not less than 20 feet, a spacing not greater than 150 feet and a lamp of not less than 10,000 lumens (1,000 cp.), equipped with proper diffusing media.

For heavy-traffic thoroughfares, the minimum recommend in an opposite arrangement of lighting units, with luminaires suspended on brackets beyond the curb at a mounting height of not less than 20 feet, a spacing of not greater than 150 feet and a lamp of not less than 10,000 lumens (1,000 cp.), equipped with proper diffusing media.

Minimum mounting heights should be employed only where trees are present or other conditions make a higher mounting height impractical. Mounting heights between 20 feet and 25 feet are recommended. This is particularly important for lamps of 10,000 lumens and should be adopted where practicable.

Business districts should be classified as primary business streets (those subject to heavy vehicular and pedestrian traffic), and secondary business streets (those subject to medium vehicular and pedestrian traffic).

The minimum recommended for primary business streets should be not less than that prescribed for heavy-traffic thoroughfares and for secondary business streets, not less than that prescribed for medium-traffic thoroughfares.

The kind of buildings, the character of pavement and the relative importance which a business street occupies in the community, are material factors in the selection of increased lighting for these streets.

Alleys should be adequately lighted for the purpose for which they are used.

Park drives, including parkways, should be classified and lighted in accordance with recommendations for thoroughfares.

For residence non-thoroughfare streets, the minimum recommended is a staggered arrangement of lighting units with luminaires suspended on brackets beyond the curb at a mounting height of not less than 18 feet, a spacing of 150 and a 2,500-lumen (250 cp.) lamp, equipped with proper diffusing media.

Where trees or other conditions make it necessary to adopt a lower mounting height (not less than 15 feet) the spacing should also be reduced to 125 feet.

Where it is necessary to locate luminaires on one side of the street, the spacing should be reduced and the height may also be reduced. Such spacing should be not greater than 125 feet, the mounting height not less than 15 feet, and the lamp size not smaller than 1,000 lumens (100 cp.), equipped with proper diffusing media.

For wide highways having three or four traffic lanes, the minimum recommended is a staggered arrangement of lighting units with luminaires suspended on brackets over the driveways at a mounting height of not less than 20 feet and spaced not more than 250 feet. With this mounting height and spacing, the lamp rating should be not less than 4,000 lumens (400 cp.), equipped with proper diffusing media.

For highways having two traffic lanes, the minimum recommended is the same as above except that lighting units may be all on the same side if necessary and spaced somewhat closer together.

On curves luminaires should be mounted over the outside of the curve.

The above applies to diffused light or specular black pavements. For diffused black pavements, the quantity of light should be at least doubled.

There are many styles of posts, fixtures and glassware on the market which will provide satisfactory street illumination and meet the standards recommended. The choice between them is a matter of individual preference, but the Committee recommends that the selection be made when the plan and program is originally adopted and be closely adhered to in order to secure uniformity throughout the community. While the utilitarian purposes should receive first consideration, the esthetic features are also of importance and should not be neglected.

Under-Water Lighting for Olympic Pool

WATER events of the Tenth Olympiad, which is now in progress in Los Angeles, will have the advantage of brilliant under-water lighting, adding greatly to the effectiveness of contests at night. As stated in *The Intake*, published by the Los Angeles Department of Water and Power:

"In cooperation with the Playground Department of Los Angeles, the illuminating engineers of the Department of Water and Power has much to do with the under-water illumination in the large pools in Exposition Park.

"Divers and swimmers from all over the world will vie for supremacy in these events. The lighting of these pools is a very important thing.

"Forty 400-watt submersible floodlights were installed in the tile sidewalls of the new pool, according to F. D. McKinstry, illuminating engineer of the Department of Water and Power.

"The lights are recessed in the sidewalls. They are arranged so that the light is properly distributed and make the pool visible at every angle so that one may see all the under-water action scheduled for the swimming events."

The pool, which holds nearly a million gallons, is 164 feet long and 65 feet, 7 inches wide, with depth increasing from 5 feet to 17 feet, the latter dimension applying for the last 50 feet of the pool's length. For the guidance of contestants seven lanes of 8-foot width are marked on the white tile bottom.

In the deep portion there are two rows of lights on each side, 5 and 15 feet respectively below the water's surface, with 10-foot horizontal spacing. For the shallow portion there is one row on each side, with spacing of 11 feet, 6 inches. The lights are of Westinghouse design, and experts of the Westinghouse Electric & Manufacturing Co. collaborated in developing the lighting scheme.

Twelve thousand spectators can be accommodated at the pool, on two grandstands. One of these has been permanently constructed over bath-house facilities, recreation halls and the mechanical equipment of the natatorium.

NIGHT VIEW OF OLYMPIC POOL, LOS ANGELES, CALIF.

POOL BEFORE FILLING, SHOWING LOCATION OF LIGHTS

Effect of Darkness in Increasing Traffic Accidents in 46 Cities

CONVINCING corroboration of the proposition that motor-vehicle accidents occur at a much greater rate in darkness than under conditions of ample light is furnished by a recent study of 46 large cities by The Travelers Insurance Co., of Hartford, Conn., which compares the number of accidents happening from 5 p. m. to 8 p. m. in summer, when daylight prevails during these hours, with the number in winter during the same period, which is then one of dusk and darkness. Under the latter conditions approximately twice as many accidents occurred as in the daylight of summer. The results of the study are given in an article entitled "Community Value of Street Lighting as an Accident Preventive," in the July number of *The Travelers Standard*.

The cities range in population from 100,000 to several million, and are scattered throughout the United States, with a combined population of 25,355,000. The daylight months taken were May, June, July and August, 1931, and were contrasted with October, November, and December, 1931, and January, 1932. The three-hour period chosen, besides being marked by the seasonal change from daylight to darkness, has the highest automobile-accident rate of any three hours of the 24. As to its traffic characteristics the article says:

"This three-hour period covers a portion of the day when the conduct of human affairs is similar during the summer months and the winter months, in the following respects: There is a heavy homeward-bound movement of office employees, 'movie' patrons, shoppers, and factory workers, by trolley, bus, automobile, and on foot, coupled with the rush of late-delivery trucking. This is followed by a heavy reverse flow of mixed traffic, largely brought about by evening social engagements."

Effect of Weather

Differences as to weather, on the one hand, and as to seasonal traffic on the other, are discussed as follows:

"We are inclined to give more weight to weather and road-surface conditions as causes of automobile accidents, than is warranted by the facts. National statistics give the following information concerning weather and road conditions prevailing at the time of accidents (the percentages refer to the whole number of accidents):

Weather		Road Surface	
Clear	83.3%	Dry	81.4%
Cloudy	5.0%	Wet	15.6%
Rain	10.6%	Icy	3.0%
Snow	1.1%		

"It should be noted that rainy or snowy weather and wet or icy road surfaces are not given as the *causes* of the accidents, but only as the conditions prevailing at the time of the accidents. Consequently they may or may not have been factors in the various situations.

"We have rain (and therefore wet road surfaces) in summer as well as in winter, although in the winter there is greater likelihood of wet surfaces, because of melting snow. Snowy weather and snow and ice on the streets are prevalent only in the winter months and, as a rule, only in the states contiguous to and north of the Mason and Dixon line. If we assume that one-half of the accidents that occur while it is raining or snowing, or while the road surface is wet, are caused by weather and road conditions, and distribute these equally between the summer and winter months, and add the 3 per cent that occur under icy conditions, we have a total of slightly less than 10 per cent of all automobile accidents that can be attributed to weather and road-surface conditions. National statistics show that 6.9 per cent of all automobile accidents are due to skidding or bad road surfaces, and this leaves approximately 3 per cent which result wholly and directly from weather conditions.

Summer Traffic Heavier

"Another factor entering into the period under review, is the fact that traffic is heavier during the summer months than during the winter months. This statement is made on the basis of reports concerning gasoline consumption, which show that 25 per cent more gasoline is used in the four summer months than in the four winter months. From a traffic-density viewpoint this should tend to make traffic in the summer months the more hazardous.

"All this leads us to the vital difference between the two seasons during this three-hour period, namely, our ability to see. . . .

"That this reduced ability to see is exacting a heavy toll, is amply proved by the accident history of the 46 cities included in our study. Between the hours of 5 p. m. and 8 p. m., in the four summer months, there were 366 fatal automobile accidents and 9,516 additional accidents in which there were no fatalities. During the same hours, in the four winter months, there were 794 fatalities and 20,644 non-fatal accidents.

"There is a logical increase (due to seasonal and road-surface conditions) in the number of winter months' accidents over the number of summer months' accidents. Assuming this to be ten per cent, and adding it to the number of fatal accidents, we still have an increase of 392 fatal and 10,177 non-fatal accidents for the winter period. From the analysis we have made there seems to be no other conclusion than that this increase is due largely, if not wholly, to inadequate illumination and our resulting inability to see."

These figures are arrived at as follows:

Automobile fatalities 5 p. m. to 8 p. m., summer months	366
Add 10 per cent due to winter weather and road-surface conditions	36
(a) Number to be expected in winter	402
(b) Number actually observed in winter	794
Number due to insufficient light (b—a)	392
Non-fatal automobile accidents 5 p. m. to 8 p. m., summer months	9,516
Add 10 per cent due to winter weather and road-surface conditions	951
(a) Number to be expected in winter	10,467
(b) Number actually observed in winter	20,644
Number due to insufficient light (b—a)	10,177

The survey also indicated that, in general, the cities with the larger expenditures for street lighting per capita showed a smaller increase in accidents in the 5 to 8 p. m. period in winter.

National Economic Loss

With the above figures as a basis, and relating them to national statistics, the article estimates the number of accidents in the entire country due to insufficient light, for the corresponding period, at 67,178. Leaving out of account the anguish occasioned by automobile accidents, "comparable only to that brought about by modern warfare and its aftermath," and taking $3,000 as the average economic loss per accident, this amounts to a total of $201,534,000. The addition of this sum to the present cost of street lighting, given as $85,000,000 annually, would, it is claimed, enable the lighting intensity with present fixtures to be increased at least four times. It is remarked in conclusion:

"We are convinced that such an increase would eliminate the great majority of all traffic accidents now chargeable to lack of light. Seldom indeed does an opportunity present itself for a community to spend a given sum of money with so great a prospect of handsome returns as can be brought about by providing adequate street lighting."

A Correction as to Detroit

In The American City for July, in the middle of page 96, certain accident percentages for the first four months of 1931 were stated to be for 1932, and those for these months of 1932 appeared as for 1931. The statement that preceded and referred to the figures is correct.

Conditions of Federal aid for self-liquidating public works are outlined on page 5 of this issue

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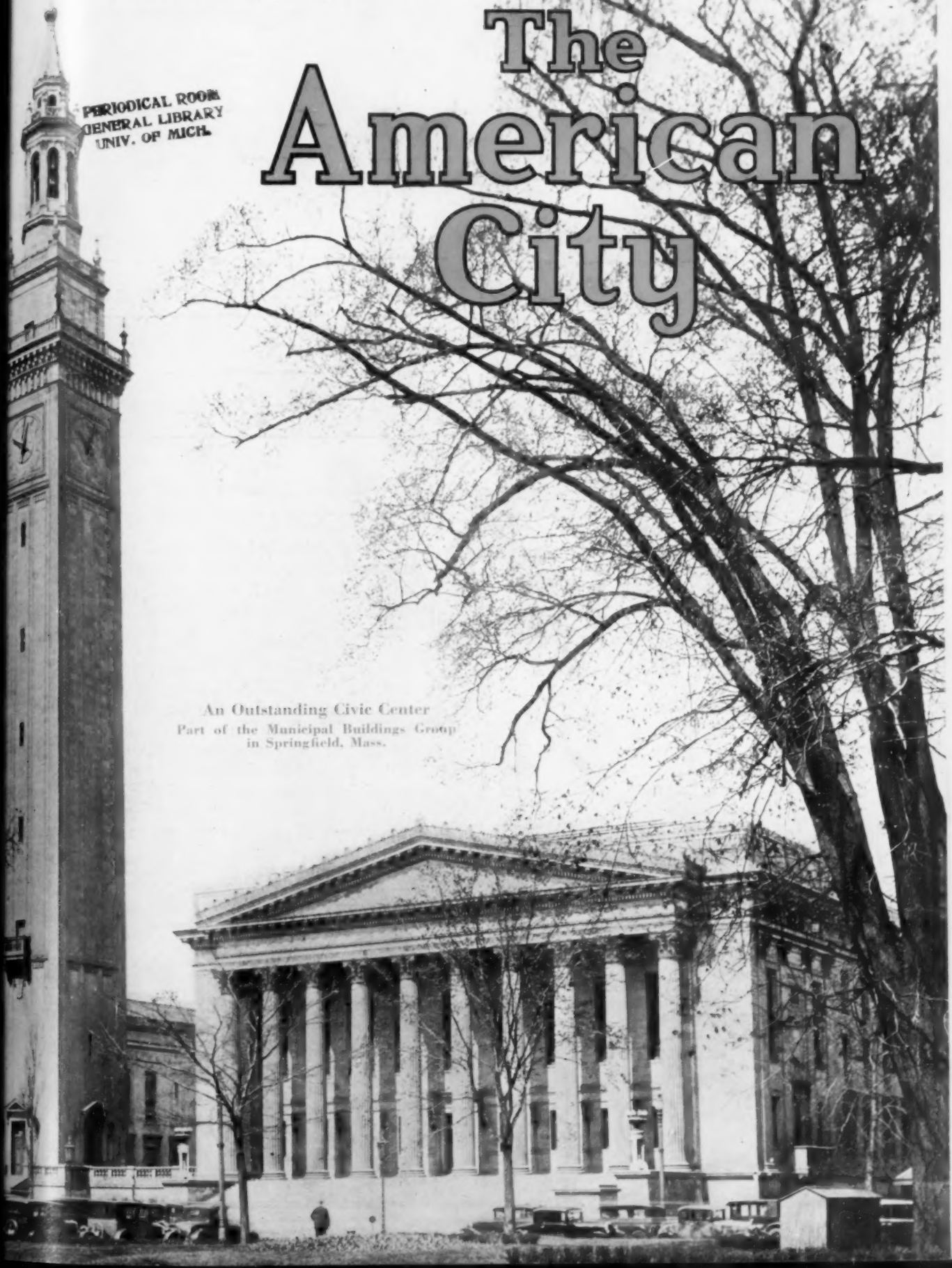

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Part of the Municipal Buildings Group in Springfield, Mass.